2-1-2012

Determinants of banking sector development in emerging economies: panel estimation

Lamia Donia

The American University in Cairo

School of Business

DETERMINANTS OF BANKING SECTOR DEVELOPMENT IN EMERGING ECONOMIES: PANEL ESTIMATION

A Thesis Submitted to

Department of Economics

in partial fulfillment of the requirements for

the degree of Master of Arts

by Lamia Donia

under the supervision of Dr. Dalia ElEdel

December 2012

DEDICATION

I lovingly dedicate this thesis to my husband and my mother, who offered me unconditional love and support throughout the course of this thesis.

ACKNOWLEDGEMENTS

First and above all, I thank Allah for providing me with strength and determination to keep going despite challenges and hard times I went through.

From the formative stages of this thesis, to the final draft, I owe an immense gratitude to my supervisor, *Dr. Dalia ElEdel, Assistant Professor, American University in Cairo*. Her continuous support and careful guidance were invaluable.

I am very grateful to my readers, *Dr. Hala ElRamly, Associate Professor, American University in Cairo* and *Dr. Mohammed Bouaddi, Assistant Professor, American University in Cairo,* for the time they dedicated to read my thesis and their insightful comments.

Finally, I would be remiss without mentioning *Dr. Ahmed Kamaly, Associate Professor of Economics and the Chair of the Department of Economics, American University in Cairo,* whose extreme generosity will be remembered always.

To each of the above, I extend my deepest appreciation.

The American University in Cairo

School of Business

DETERMINANTS OF BANKING SECTOR DEVELOPMENT IN EMERGING ECONOMIES: PANEL ESTIMATION

by Lamia Donia

under the supervision of Dr. Dalia ElEdel

ABSTRACT

The study provides new evidence on the determinants of banking sector development, using data from 18 emerging economies during 2000-2009. The study employs panel data analysis, namely Random Effect, Feasible Generalized Least Squares and Dynamic Generalized Method of Moments estimations. The empirical results demonstrate that rule of law; economic growth and workers' remittances promote banking sector development. However, financial liberalization and liberal trade policies have an insignificant influence on banking sector development. Therefore, the study suggests that emerging countries, aiming at enhancing banking sector development, should establish strong institutional infrastructure; whereas financial liberalization and trade openness should come at a later stage. Finally, the study provides evidence on a complementary relationship between banking sectors and capital markets in emerging countries.

TABLE OF CONTENTS

TABLES vii
FIGURES vii
COUNTRY ABBREVIATIONS viii
I. INTRODUCTION 1
Importance of the Study 5
II. LITERATURE REVIEW 6
A. Theoretical Review 6
B. Empirical Review 8
1. Financial Liberalization 8
2. Institutions 10
3. Trade Openness 11
4. Workers' Remittances 12
5. Economic Growth 12
Research Problem 13
Thesis Statement 13
III. ANALYTICAL EXAMINATION OF THE BANKING SECTOR 14
A. Banking Depth 14
B. Banking Access 15
C. Banking Efficiency 15
D. Banking Stability 16
Correlation with Private Sector Credit 17
IV. METHODOLOGY 19
A. Model Specification 19
B. The Data 20
Descriptive Statistics and Correlations 23
C. Empirical Methodology 26
1. Random Effect and FGLS 26
i. Test for Multicollinearity and Test for Omitted Variables Significance 26
ii. Test for Cross-panel Heteroscedasticity 27
iii. Test for Autocorrelation 27
2. Dynamic Generalized Method of Moments 28
i. Difference GMM Estimation 29
ii. System GMM Estimator 29
Specification Tests of Sys-GMM Estimator 30
V. ESTIMATION RESULTS 31
VI. CONCLUSION 34
REFERENCES 35
APPENDIX (A): EMPIRICAL LITERATURE REVIEW ON THE DETERMINANTS OF BANKING SECTOR DEVELOPMENT 42
APPENDIX (B): DESCRIPTION OF VARIABLES 59
APPENDIX (C): BANKING SECTOR CHARACTERISTICS 62

TABLES

Table (1): Descriptive Statistics …. 24

Table (2): Correlations …..……..... 25

Table (3) Estimation Results: Dependent Variable Ln(Private Sector Credit/GDP) ..33

FIGURES

Figure (1): Private Sector Credit (% of GDP) (2000-2009) by Region ……... 4

Figure (2): Correlation between Private Sector Credit and the Main Characteristics of the Banking Sector ……. 18

COUNTRY ABBREVIATIONS

BRL	Brazil	MAR	Morocco
CHL	Chile	PAK	Pakistan
ECU	Ecuador	PER	Peru
EGY	Egypt	PHL	Philippines
IND	India	RUS	Russian Federation
IDN	Indonesia	ZAF	South Africa
JOR	Jordan	THA	Thailand
MYL	Malaysia	TUN	Tunisia
MEX	Mexico	TUR	Turkey

"He can only become an entrepreneur by previously becoming a debtor" Schumpeter (1912, p.102)

I. INTRODUCTION

Well-functioning financial systems lead to efficient capital allocation, risk diversification, reduction of transaction costs and information asymmetry thereby stimulating growth in the long run and improving the overall economic productivity (Fry, 1995; Buera, Kaboski, & Shin, 2009). Moreover strong domestic financial systems offer a stable source of finance instead of volatile external capital flows (Zoli, 2007; Kpodar & Gbenyo, 2010). Guillaumont Jeanneney and Kpodar (2011) show that the poor can benefit from the development of financial systems through the reduction of transaction cost and the provision of saving opportunities through the McKinnon 'conduit effect'[1].

Therefore, financial development became a policy priority for governments. Nevertheless, some countries succeeded in achieving deeper financial systems while others remained financially underdeveloped (Law & Habibullah, 2009). Thus, the question of what determines financial development became increasingly important.

The financial system comprises mainly of the banking sector, the capital market, the insurance sector and the mortgage finance sector. The literature suggests that most emerging countries depend on the banking sector as the main pillar of the financial system (Levine & Zervos, 1998; Levine, 2002); therefore the study focuses on the development of the banking sector.

To assess banking sector development, various measures were used in the literature. Some of these measures are sized-based such as: the ratios of money and quasi money (M2)[2] and liquid liabilities[3], also known as financial depth measure

[1]The conduit effect assumes that even if financial institutions do not provide finance to the poor, they will benefit the poor through profitable financial opportunities for savings.

[2]It comprises the sum of currency outside banks, demand deposits other than those of the central government, and the time, savings, and foreign currency deposits of resident sectors other than the central government.

[3]Liquid liabilities are also known as broad money (M3). They are the sum of currency and deposits in the central bank (M0), plus transferable deposits and electronic currency (M1), plus time and savings deposits, foreign currency transferable deposits, certificates of deposit, and securities repurchase

(Levine, Loayza, & Beck, 2000; Demirguc-Kunt & Levine, 2001; W. Huang, 2006). However a major problem of size-based measures is that the size of the banking sector does not necessarily measure its capacity to perform its functions as a financial intermediary (Levine, *et al.*, 2000). In addition, size-based measures can be too high in countries with underdeveloped banking sectors since money is the only means to store value in the absence of attractive alternatives (Svaleryd & Vlachos, 2002). Moreover these measures do not distinguish between credit allocated to the government and that to the private sector (Klein & Olivei, 2008); however credit allocated to the government may reduce the resources available to the private sector thereby adversely affecting private investment.

Another measure of banking sector development is the ratio of deposit money bank assets to total assets of deposit money banks plus the central bank. The intuition behind this measure is that deposit money banks are more likely to identify profitable investments, monitor managers and mobilize savings than central banks (Levine, *et al.*, 2000). However not all bank assets are directed to the productive sector.

Credit issued by deposit money banks to the private sector (as a percentage of GDP) is another measure of banking sector development. This measure excludes credit issued to the government and government agencies as well as credit issued by the central bank and development banks (Levine, *et al*., 2000; Y. Huang, 2010). And it is relevant for measuring opportunities for new firms to obtain finance (Rajan & Zingales, 2003). Besides, there are other measures that focus on banking efficiency such as overhead cost[4] and bank net interest margin[5] (Demirguc-Kunt & Levine, 2001).

Since the study is interested in the ability of the banking sector to allocate credit to the private sector, it employs private sector credit (*PC*) as a proxy to banking sector development[6]. Besides, this measure overcomes the disadvantages of sized-

---

agreements (M2), plus travelers checks, foreign currency time deposits, commercial paper, and shares of mutual funds or market funds held by residents.

[4]It is calculated as operating expenses of a bank as a share of the value of all held assets.

[5]Accounting value of bank's net interest revenue as a share of its average interest-bearing (total earning) assets.

[6]It is employed by several empirical studies to proxy banking sector development (Arestis and Demetriades, 1997; Levine, 1998; Shan, Morris and Sun, 2001; La Porta, Lopez-de-Silanes, and Shleifer, 2002; Svaleryd and Vlachos, 2002; Law and Demetriades, 2006; Djankov, McLiesh, and Shleifer, 2007; Klein and Olivei, 2008; Law, 2008; Tressel and Detragiache, 2008; Law, 2009; Law

based measures.

Therefore, the study examines the determinants of banking sector development over the period 2000-2009 in a panel sample of 18 emerging countries[7] according to the IMF classification of 2009 (Ghosh, Chamon, Crowe, Kim, & Ostry, 2009). The IMF classifies them as countries that are neither part of the advanced economies nor of the low-income countries eligible for Poverty Reduction and Growth Trust (PRGT)[8]. The main feature of emerging countries is their transitional character in the economic, institutional and political dimensions (Mody, 2004). The 18 emerging countries are selected from four different regional groupings: Middle East and Africa includes Egypt, Jordan, Morocco, Tunisia, and South Africa; Asia includes India, Indonesia, Malaysia, Pakistan, Philippines and Thailand; Europe includes Turkey and the Russian Federation; and Latin America and Caribbean includes Brazil, Chile, Ecuador, Mexico and Peru.

The following figure depicts a considerable variation in the pattern of banking sector development proxied by private sector credit over the period 2000-2009; ranging from 15.8% in Mexico to a high of 109.4% in Malaysia on average. Whilst there is an upward trend of private sector credit in the majority of countries, there is a significant downward trend in Malaysia and Thailand whereas in Egypt and Tunisia and the Phillipines there is a mild decrease. In addition the rate of change over the period under study varies significantly.

---

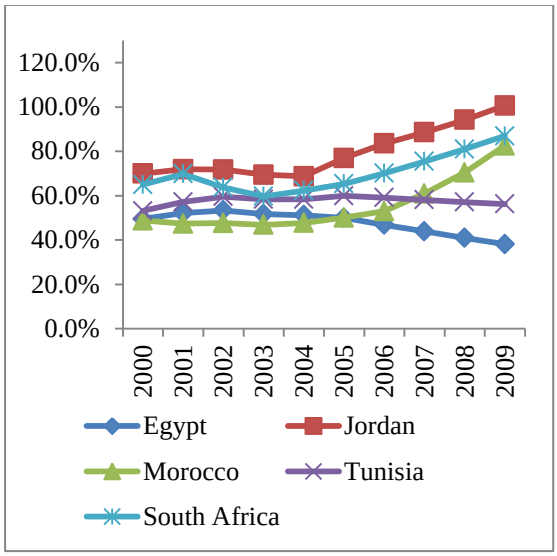
and Habibullah, 2009; Assane and Malamud, 2010; Y. Huang, 2010; Yu and Gan, 2010; Aggarwal, Demirgüç-Kunt, Pería, 2011; Oke, Uadiale and Okpala, 2011; Becerra, Cavallo, and Scartascini, 2012).

[7]Since there is a lack of data on institutional characteristics and banking liberalization reforms in emerging countries, only 18 countries are examined.

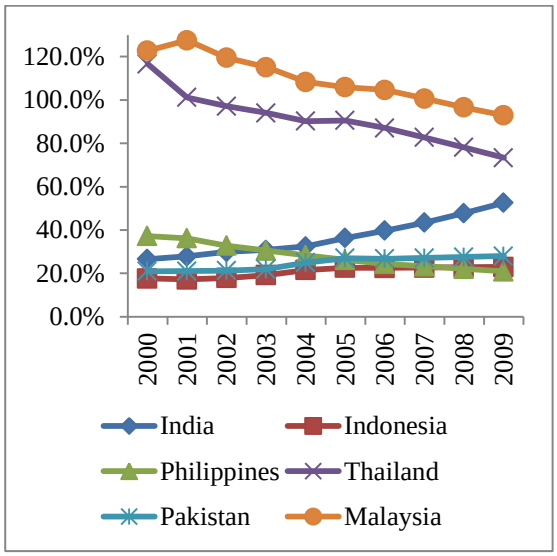
[8]A number of definitions are used by several entities such as Morgan Stanley, Standard and Poors, and Dow Jones.

Figure (1): Private Sector Credit (% of GDP) (2000-2009) by Region

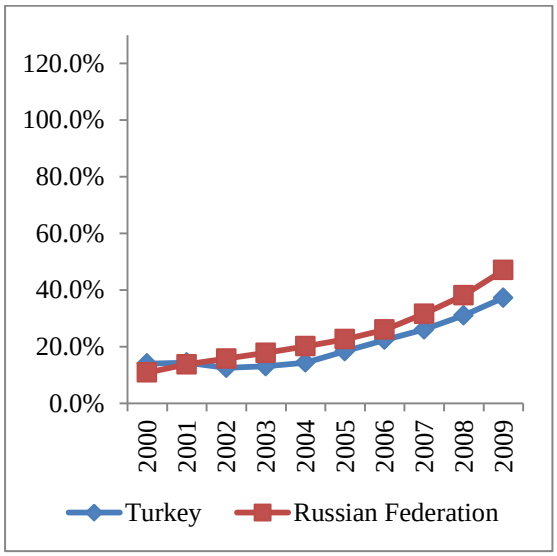
a) Middle East and Africa



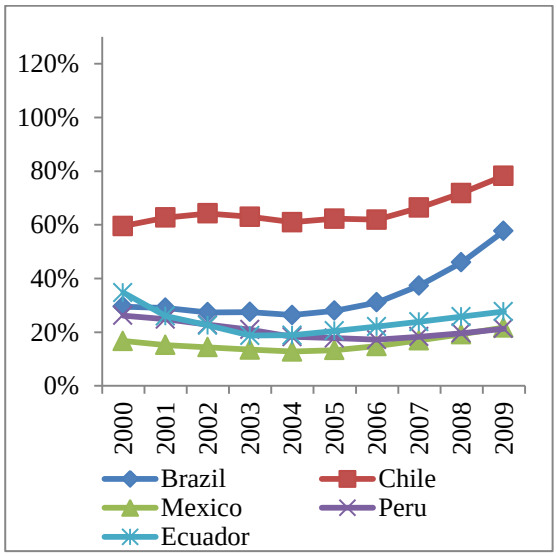
b) Asia



c) Europe



d) Latin America and Caribbean



Source: Beck and Demirgüç-Kunt (2009).

Importance of the Study

As mentioned previously banking sector is critical for the whole economy. In addition, having underdeveloped banking sector can hinder the development process. Emerging economies rely on the banking sectors as the main providor of the finance required for new investment opportunities. Therefore, the main objective of the study is to investigate the factors that affect banking sector development in emerging economies and determine the policies that can accelerate it where it lags behind. In addition the study examines the relationship between different financial system pillars, namely banking sectors and capital markets in order to assess whether they are complementing or competing with each other.

Banking sector development is proxied by private sector credit which captures the capacity of credit allocation to the private sector; however this measure may fail to capture the complete picture of the banking sector. Private sector credit does not take into consideration the quality of credit provided; the households' access to financial services; or the efficiency of the banking sector in performing its functions. Therefore, in order to get a deeper insight into other aspects affecting banking sector development, the study conducts an analytical examination addressing four main characteristics of the banking sector which are: depth, access, efficiency and stability.

In what follows, Section II reviews the theoretical and empirical literature on the determinants of banking sector development. Section III conducts an analytical examination to the banking sectors of the sample during 2000-2009. Section IV explains the methodology and describes the data and the empirical model. Section V presents the estimation results. Finally, Section VI concludes.

II. LITERATURE REVIEW

A. Theoretical Review

Theories about the importance of finance in the economy can be traced back to Locke (1695), Smith (1776), Bentham (1787), Bagehot (1873) and Schumpeter (1912, p.102) who states that "He can only become an entrepreneur by previously becoming a debtor". However in the beginning of the 20th century, the dominant theory was in support of neutral or even negative effect of finance on growth (as cited in Fry, 1995). Robinson (1952) argues that finance responds to changes in the real sector. Moreover, Lucas (1988) believes that finance is not a significant determinant of growth.

Countries used to repress their banking sectors through imposing interest rate ceilings following the work of Keynes, Tobin and Structuralist Economists[9]. In his liquidity preference, Keynes (1936) shows that people may hold money for speculative reasons if they are expecting the market value of an alternative asset such as bonds will fall. The preference of people to hold money instead of productive capital leads to inadequate level of investment thereby output. Therefore, imposing an interest rate ceiling keeps the prices of bonds from decreasing, leading to a higher investment level. However this solution ignores the inflationary consequences. In 1965, Tobin develops the portfolio allocation model. He explains that if the return on capital relative to money rises, households will increase the ratio of capital to money leading to higher capital/labor ratio, higher labor productivity hence higher economic growth. Then reducing deposit rates increases welfare. In addition, Sturcturalists and Neostructuralists argue that higher interest rates lead to higher inflation in the short run thus reduces the supply of credit in real terms required to finance investment which will lower economic growth rates (Fry, 1995).

In 1973 the dominant theory of financial repression was forcefully challenged. McKinnon (1973) and Shaw (1973) analyze developing countries that are financially repressed. They find that imposing constraints over the banking sector such as interest rate ceilings results in negative real interest rates which lead to the reduction of

[9]Structural economics emphasizes that the structural features of the economy need to be taken into account in the analysis of the economic development process as well as the role of the state in it (Lin, 2011).

savings below the socially optimum level thereby investment. In addition credit rationing programs lead to further reduction of investments as well as the productivity of capital. Moreover governments impose excessively high reserve requirements on banks, usually at low or even zero interest rates, in order to finance their own deficits cheaply. However, high reserve requirements act as a tax on the banking system, resulting in further depression of interest rates. Therefore they conclude that financial liberalization is critical for banking sector development thereby growth.

Endogenous growth literature also predicts that financial repression in the form of discriminatory taxes on financial intermediation negatively affects financial development and reduces economic growth. King and Levine (1993a) show that financial sector taxation is equivalent to taxation on innovative activities. By lowering the net returns gained by financial intermediaries from financing entrepreneurs, the financial services provided will be reduced as well. "Financial repression… impedes innovative activity and slows economic growth" (King & Levine 1993a, p.517).

Over the past three decades, heeding the advice of McKinnon and Shaw, many countries witnessed a wave of financial liberalization in order to develop well-functioning banking sectors (Tressel & Detragiache, 2008). However the question remains: why did some countries succeed in developing well-functioning banking sectors, while others did not? Hence theories were developed to examine other determinants of financial development.

A strand of the literature focuses on the political incentives for financial development. The interest group theory proposed by Rajan and Zingales (2003) suggests that development of the banking sector as well as the capital market foster competition and allow the entry of credit-constrained firms. Therefore, incumbent interest groups oppose financial development. However their opposition is weaker in case of liberal trade policies and free cross-borders capital flows. Haber, North, and Weingast (2008) show that the government may have an incentive to hinder financial development so that it can draw resources from banks and capital markets resulting in lax financial markets. Becerra, Cavallo, and Scartascini (2012) build on these contributions by constructing a theoretical model suggesting that the intensity of opposition to financial development is determined by the degree of credit dependency by incumbents as well as the government's ability to avoid distorting the financial system. They provide empirical evidence for their claim in a sample of developed and

developing countries. Their results show that lower opposition fosters financial development only in those countries with high government capabilities; and improvements in government capabilities has an impact only in those countries in which credit dependency is high.

The literature also highlights the role of institutions in enhancing financial development. Acemoglu and Johnson (2005) show that property rights institutions, which protect against government and elite expropriation, as well as contracting institutions, which regulate transactions between private parties such as a debtor and a creditor, have a major influence on financial development.

B. Empirical Review

The determinants of banking sector development receive great attention in the empirical literature as well. A strand of the literature focuses on macroeconomic variables such as GDP per capita, inflation and remittances. On the other hand, recent studies focus on financial policies and reforms; legal and political institutions; and trade policies as the main determinants of banking sector development. However the results provide mixed evidence still. Some empirical studies focus on the capital market development besides the banking sector. Moreover, the degree of banking sector development is proxied by different measures such as: liquid liabilities, bank credit to the private sector, money and quasi-money (M2), and deposit money bank assets. In addition, few studies construct composite indices and indicators to measure financial development (Cuadro, Gallego & García Herrero, 2003; Y. Huang and Temple, 2005; W. Huang, 2006, and Sharma & Nguyen, 2010). Appendix (A) includes further elaboration on the empirical literature. The following section reviews the empirical literature on the determinants of banking sector development.

1. Financial Liberalization

Demetriades and Luintel (1996) show that controls over the Indian banking sector such as interest rates ceiling, liquidity and reserve requirements and directed lending programs, have a negative impact on financial depth; except lending rate ceiling which has a small positive impact. Arestis, Demetriades, Fattouh, and Mouratidis (2002) also examine the impact of financial repression proxied by interest rate restraints and reserve requirement and liquidity ratios, on banking sector development in six developing countries (Egypt, Greece, Thailand, Philippines, Korea, and India).

They find that banking liberalization policies have significant positive effect however this effect varies across countries. They conclude that this variation may reflect institutional differences. La Porta, Lopez-de-Silanes, and Shleifer (2002) use government ownership of banks as an indicator of repressed banking sectors. They find that government ownership of banks in poor countries is associated with slower banking sector development as well as slower economic growth.

Tressel and Detragiache (2008), using a dataset of developing and developed countries, find that liberalization reforms[10] lead to banking sector development, proxied by the ratio of private credit to GDP, in the long run but only in countries with institutions that protect property rights. Obamuyi and Demehin (2012) also find a significant impact of interest rate reforms on banking sector development in Nigeria.

With regard to financial openness, W. Huang (2006) examines the effect of financial openness[11] on financial development[12] in a panel of emerging markets. He finds that financial openness explains cross-country differences in the development of the financial system. Moreover, Law (2008) finds that capital account openness is a positively significant determinant of banking sector development in Malaysia. In addition, Klein and Olivei (2008) find that liberalization of capital accounts has a significant impact on banking sector development in the presence of institutional infrastructure. Also, Abzari, Zarei and Esfahani (2011) find that foreign direct investment (FDI) leads to banking sector development in a sample of developing countries. Whereas, Erosy (2011) finds that financial openness, measured by FDI inflows and portfolio investment, is in a long run equilibrium relationship with banking sector development in Turkey, however the causality runs in one direction from banking sector development to financial openness.

On the other hand, Arestis, and Demetriades (1997) develop an indicator of financial repression[13]. They find a positive effect of financial repression policies on banking sector development in South Korea. Their finding is consistent with the

[10]They used an index of domestic banking reforms constructed by Abiad, Detragiache and Tressel (2008). This index measures banking reforms in five areas (credit controls and reserves requirements, interest rate controls, entry barriers, state-ownership and banking supervision).

[11]He uses an aggregate index for financial openness including: stock market openness, FDI, and private capital flows.

[12]It is measured by an index that aggregate groups of financial indicators from the banking sector and the capital market.

[13]It is a weighted index of banking sector controls such as interest rate ceilings, directed credit programs and high reserve requirements.

monopoly banking model under which profit maximizing volume of deposits increases with a lending rate ceiling. Similarly, Yu and Gan (2010) find that financial liberalization[14] has a negative impact on banking sector development in Malaysia. Their results indicate that financial liberalization should come in a later stage, when adequate institutions and sound macroeconomic policies are already in place.

2. Institutions

Several empirical studies emphasize the role of legal and institutional characteristics such as: rule of law, creditors' rights, property rights, corruption, executive constraints, political stability, etc., in explaining the variation of banking sector development across countries. La Porta, Lopez-de-Silanes, Shleifer and Vishny (1997) and Levine (1998) use a dataset of developing and developed countries divided by their legal origin. They find that legal rules protecting creditor rights and their enforcement have a robust impact on banking sector development. Cuadro, *et al.* (2003) examine the impact of two factors, namely the central bank role[15] and bank regulation and supervision[16] on financial development[17] using a dataset of industrial and emerging countries. The results reveal that large involvement of the central bank in the financial system contributes to financial development in all countries. Moreover, high quality regulation and supervision, particularly supervisors' independence, is beneficial in industrial countries. However, in emerging countries, supervisors' independence will only contribute to financial development in the presence of strong rule of law.

Djankov, McLiesh, and Shleifer (2007) find that creditor's protection and information-sharing institutions are significant determinants of banking sector development. Law and Habibullah (2009) find that institutional quality[18] and real GDP per capita are significant determinants of banking sector development in a panel data of developing and developed countries. In addition, Assane and Malamud (2010), using a sample of Sub-Saharan African countries (SSA), try to analyze the impact of legal origin and membership in the Communaute Financiere Africaine (CFA)

[14]It is proxied by an index constructed by Kaminsky and Schmukler (2001).
[15]Central bank role includes: involvement in payments system, lender of last resort and Central bank objectives.
[16]Regulation and supervision includes: quality of Regulation, supervisory Enforcement and independence of supervisors.
[17]Cuadro, *et al.* (2003) construct a new measure of financial development which includes several indicators of financial size and efficiency for 134 countries.
[18]They use five indicators to proxy institutional quality constructed by Political Risk Services which are: corruption, rule of law, bureaucratic quality, government repudiation of contracts, and risk of expropriation.

currency union on banking sector development and economic growth. They show that banking sector development is higher in English legal origin SSA compared to French legal SSA. Moreover, banking sector development contributes positively to growth in English legal origin SSA. On the other hand, banking sector development has a negative or an insignificant impact on growth in French legal origin SSA. In addition, they find that membership in the CFA currency union hinders banking sector development.

Moreover, Y. Huang (2010) find a significant effect of institutional improvements[19] on banking sector development at least in the short-run, especially for lower income countries and French legal origin countries using a panel dataset of 90 developed and developing countries. Sharma and Nguyen (2010) also emphasize on the direct relationship between law enforcement quality[20] and banking sector development[21] using a sample of developed and developing countries; however they show that creditor's rights may not be as influential as had been thought previously.

With regard to political instability, Roe and Siegel (2011) provide evidence that it impedes financial development. Voghouei, Azali and Law (2011) examine the effect of political power in establishing economic institutions[22] that are important for financial development. Two groups of variables are employed to proxy political power: political institutions and distribution of resources[23]. By using a panel of developing and developed counties, the empirical results show that political power is a significant determinant of economic institutions, hence positively affects financial development.

3. Trade Openness

Studies on the relationship between trade openness and banking sector development

[19]Institutional improvements are proxied by an indicator from the PolityIV Database (Marshall and Jaggers, 2009) which proxies the degree of democracy and measures the institutional quality based on the freedom of suffrage, operational constraints and balances on executives, and respect for other basic political rights and civil liberties.

[20]It includes efficiency of the judicial system, rule of law, corruption, risk of expropriation and the likelihood of repudiation by government.

[21]They constructed an index of banking sector development which is a weighted average of the ratios of bank assets, private sector credit and liquid liabilities to GDP.

[22]Economic institutions variables are corruption, bureaucratic quality, government repudiation of contracts, risk of expropriation, and rule of law.

[23]The political institutions variables are executive recruitment and executive constraints, political competition, political checks and balances and political transparency; and the distribution of resources is proxied by the Gini coefficient.

provide mixed results. Y. Huang and Temple (2005) construct an indicator[24] to measure the overall financial development. Their results show that trade openness has significant positive impact on financial development especially for lower income countries. Law and Demetriades (2006) and Law (2009) show that trade openness and financial openness are significant determinants of financial development in developing countries. They suggested that openness leads to higher development through better institutional quality. Kim, Lin, Suen (2010) find a positive impact of trade openness on banking sector development in lower-income countries however they find a negative long-run and insignificant short-run impacts in high-income countries.

Whereas, Svaleryd and Vlachos (2002) find a significant relationship between trade openness and banking sector as well as capital market development with causation running in both directions. On the other hand, Bordo and Rousseau (2011) do not find a significant relationship between trade and financial development for 17 advanced economies.

4. Workers' Remittances

Aggarwal, Demirgüç-Kunt and Pería (2011); Chowdhury (2011); and Oke, Uadiale and Okpala (2011) focus on developing countries. They concluded that remittances have a significant positive impact on banking sector development.

5. Economic Growth

A vast majority of the literature focus on the growth-finance nexus. However the direction of causation between growth and financial development remains inconclusive. The findings of Arestis and Demetriades (1997) confirm a positive impact of growth on banking sector and capital market development in the USA while there is a unidirectional causality from financial development to growth in Germany. Hassan, Sanchez and Yu (2011) show that growth leads finance in developing countries, because of the increasing demand for financial services.

On the other hand, Demetriades and Hussein (1996) and Shan, Morris and Sun (2001) find evidence on bidirectional causality between growth and financial development. Whereas, Christopoulos and Tsionas (2004) find that the direction of

[24]This indicator is based on eight components: liquid liabilities, private sector credit, commercial bank assets, net interest margin, market capitalization, value of traded shares and turnover ratio.

the relationship is from finance to growth.

It is clear that the literature on the determinants of banking sector development, while agreeing on the positive significant impact of institutional quality and remittances, provide mixed evidence on the rest of the determinants. Moreover the causality between banking sector development and economic growth, trade openness, as well as financial openness remains questionable.

Research Problem

Emerging economies aim at establishing a well-functioning banking sector capable of mobilizing savings and channeling them to productive investments. Thus, the study examines the determinants of banking sector development in a sample of 18 emerging economies. In accordance with the literature, the study employs four groups of determinants: financial liberalization including banking sector liberalization, and capital account openness; institutional and legal characteristics including rule of law, freedom from corruption, property rights protection and legal origin; macroeconomic variables including remittances, real GDP per capita, and inflation in addition to openness to trade. Section IV provides details on the determinants employed.

While accomplishing this goal, the study employs a proxy to capital market development to examine whether it complements banking sector development or competes with it in emerging countries. The study uses panel estimation methods which are: Random Effect, Feasible Generalized Least Squares (FGLS), and Dynamic Generalized Method of Moments (GMM) estimations.

Thesis Statement

The study addresses the following main questions with respect to emerging economies:

What are the main determinants of banking sector development?

Does the capital market compete with or complement the banking sector?

What are the main characteristics of the banking sector in emerging countries?

The first two questions are tackled in Section IV. While in the following section, the study addresses the third question in order to shed the light on other characteristics of the banking sector not assessed by private sector credit which are: depth, access, efficiency and stability.

III. ANALYTICAL EXAMINATION OF THE BANKING SECTOR

The study employs private sector credit as a proxy to banking sector development; however this measure does not provide the complete information on banking sector development. First, it does not take into consideration non-performing loans and the quality of credit allocated. Second, it does not capture the access to bank finance by the household sector. Third, it fails to capture the efficiency and the profitability of banks. Finally it does not provide information on the stability of the banking sector. When banking sectors perform poorly according to these dimensions, they tend to hinder economic growth which may lead to economic crises.

Therefore, in this section the study conducts an analytical examination to the banking sectors of the sample during 2000-2009 addressing the four main characteristics which are: depth, access, efficiency and stability[25]. Data are presented in Appendix (C).

A. Banking Depth

Banking depth is regarded as the measure of the size of the banking sector relative to the overall size of the economy. This dimension consists of the traditional financial aggregates (M2, bank deposits, deposit money bank assets and central bank assets) as a percentage to GDP. The level of banking depth is widely dispersed across the sample e.g. the percentage of M2 to GDP is 25% in Ecuador compared to 132% in Malaysia on average. In comparison with high-income countries (HICs) reporting a value of 121%, the percentage of M2 to GDP in the sample amounts to 76%. With regard to deposit money bank assets, the sample reports a value of 59% while HICs reports a value of 102%. As a result, depth indicators are found to be proportional to the country's income level.

The percentage of central bank assets to GDP in Egypt is the highest across the sample reaching 30% on average. This is attributed to the increase in both net foreign assets[26] and net domestic assets. Net domestic assets increased due to the

[25] Data reported are the average of the period 2000-2009.
[26] Net foreign assets decreased in FY 2010/2011 due to the decrease in foreign exchange reserves (CBE, 2011).

increase of the central bank net claims on the government; and the decline in government deposits. In addition, the central bank net claims on banks went up as well (Central Bank of Egypt [CBE], 2010).

B. Banking Access

A well-functioning banking sector provides financial services to a wide range of firms and households. HICs have on average twice more bank branches and automated teller machines (ATMs) per 100,000 adult than the sample. The degree of access varies widely across the sample as well, where Brazil has on average 10 times more bank branches per 100,000 adult than Egypt and 20 times more ATMs per 100,000. Still, access to financial services in the sample is growing. The average number of bank branches per 100,000 adult increased by about 60% during 2004–2009 whereas growth of bank branches was stagnant in HICs.

C. Banking Efficiency

This dimension focuses on the ability of banks to intermediate resources and facilitate financial transactions efficiently (Cihak, Demirguc-Kunt, Feyen, & Levine, 2012). It includes three groups of variables: profitability, efficiency and competitiveness measures. With regard to return on assets, this measure stands at 1% on average however Ecuador reports a negative value for this ratio (-1.7%) which indicates that its banking sector has achieved losses[27].

However the performance of the banking sectors on other profitability measures such as return on equity (11%) and net interest margin (3%) is close to HICs (12%), (1.8%) respectively on average. Nevertheless profitable banks are not necessarily efficient. For example, the ratio of overhead costs to total assets is high compared to HICs, reaching the double. Moreover lending-deposit spread reaches two-digit values in Peru (20%) and Brazil (39%) which is an indicator to inefficiency. High lending-deposit spread discourages savers because of low returns on deposits thereby decreasing financing opportunities for potential borrowers (Tennant and Folawewo, 2009).

Bank concentration ratio[28] ranges from 33% in India to 82% in South Africa on average. In 2000, bank concentration ratio in the Philippines was 100% however

[27] In 2000, ROA in Ecuador stood at -11.8 however the performance improved in following years reporting a value of 1.3% in 2009.

[28] It consists of the assets of the three largest commercial banks as a share of total commercial banks assets.

this ratio decreased to reach 43% in 2009 indicating the reduction of entry barriers. With regard to foreign banks, Mexico, Pakistan and Peru report high percentage of foreign bank assets to total banks assets, exceeding 40% on average. In Egypt, the percentage of foreign banks to total banks exceeds 40% on average however they account for only 19% of total assets.

Another competitiveness measure is the Boone indicator[29]. This indicator measures the degree of competition based on profit-efficiency in the banking sector. It is calculated as the elasticity of profits to marginal costs therefore a positive Boone indicator implies a deterioration of the competitiveness of banks. The Boone indicator is negative for all countries except for Chile and Malaysia in 2009. In addition, this indicator is positive in Tunisia during the period under study indicating a weak competitive conduct of the Tunisian banking sector.

D. Banking Stability

Stability is an important feature of the banking sector. Banking stability is crucial for broader macroeconomic stability. One of the banking stability measures is the ratio of regulatory capital to risk-weighted assets which measures the capital adequacy of deposit takers. Capital adequacy and availability ultimately determine the degree of robustness of banks to weather shocks to their balance sheets. Banking sectors of the sample have a high capital adequacy ratio which stands at 15% on average whereas Basel III recommends that this ratio should be at least 8% which may indicate the desire of banks to implement stronger prudential regulations. This ratio stands at 12% in HICs.

Another measure is the percentage of nonperforming loans (NPLs) to gross loans which is a proxy to asset quality. The sample performs poorly on this indicator (8%) compared to the averages of middle-income countries (MICs) (7%) and HICs (2.5%). Tunisia (20%) and Egypt (19%) report the highest ratios of NPLs while Chile reports the lowest ratio (1.4%).

The ratio of liquid assets to deposits and short term funding is intended to capture the liquidity mismatch of assets and liabilities, and the extent to which deposit takers can meet the short-term withdrawal of funds without facing liquidity constraints. Liquid asset ratio of the sample (30%) is slightly less than MICs (35%)

[29] The rationale behind this indicator is that higher profits are achieved by more efficient banks. Hence, the more negative the Boone indicator, the higher the degree of competition is because the effect of reallocation is stronger (Global Financial Development Report, 2012).

and HICs (34%) on average.

A key measure of the stability of the banking sector is the Z-score[30] which captures the probability of default of the banking sector. It compares a bank's equity capital and returns with the volatility of those returns. The Z-score of the banking sectors in the sample stands at 21 which is higher than that of MICs (15) and HICs (18) except Pakistan (8.5) and Thailand (3.4) where the Z-scores are very low indicating higher probability of insolvency.

The characteristics of the banking sectors vary significantly across the sample however the majority of them can be regarded as deep banking sectors whereas the ability of individuals and firms to access their financial services is constrained compared to MICs and HICs still. Moreover, although most of them are profitable compared to HICs, they are less efficient. In addition these banking sectors are characterized by stability compared to HICs with regard to capital adequacy, liquidity, and probability of default however their asset quality (proxied by NPLs) is considered poor.

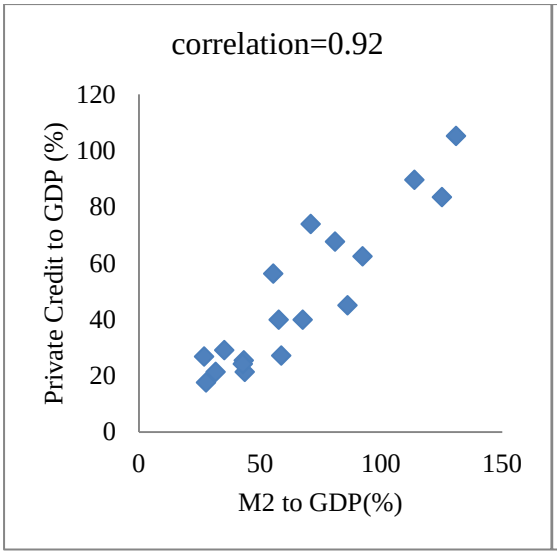
Correlation with Private Sector Credit

Figure (2) shows the correlation between private sector credit and the four main characteristics of the banking sector proxied by selected indicators for the 18 emerging countries. Private sector credit is weakly correlated with access (proxied by the number of bank branches and ATMs per 100,000 adult) and banking stability (proxied by Z-score). However it is highly correlated with banking depth (proxied by ratio of M2 to GDP), with a correlation coefficient =0.92. It is also highly correlated with banking inefficiency (proxied by the ratio of overhead cost), with a correlation coefficient=-0.66. Hence private sector credit is considered a proper proxy for banking sector development.

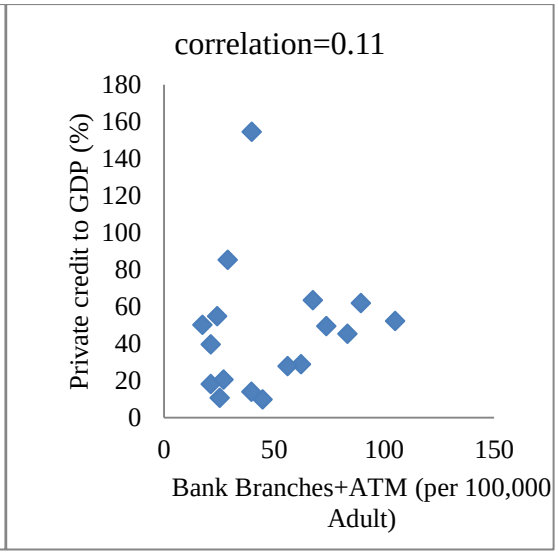
[30] It is calculated as a weighted average of the Z-scores of a country's individual banks.

Figure (2): Correlation between Private Sector Credit and the Main Characteristics of the Banking Sector

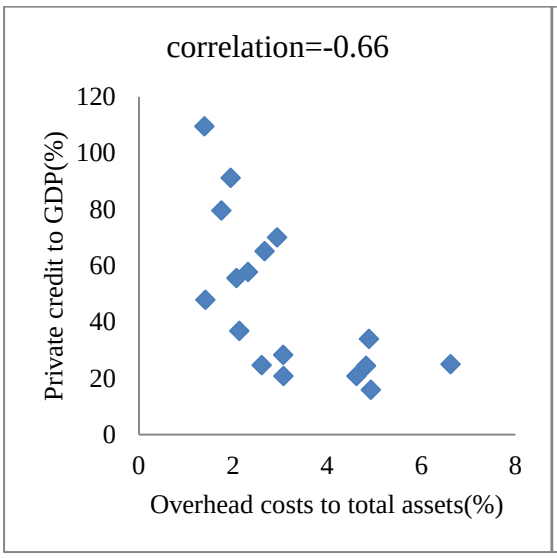
a) Depth



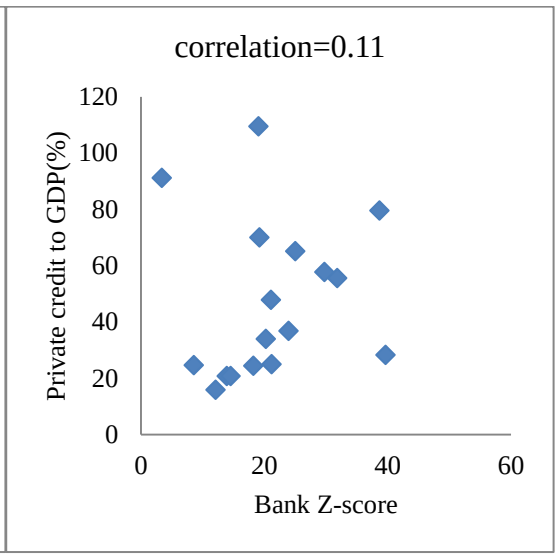
b) Access



c) Inefficiency



d) Stability



Data is averaged over 2000-2009 for the 18 emerging countries
Source: Author's calculation based on data collected from Beck and Demirguc-Kunt (2009); Financial Access Survey, IMF (2012); Global Financial Development Report, World Bank (2012); and World Development Indicators, World Bank (2012)

IV. METHODOLOGY

A. Model Specification

According to the models of Mckinnon (1973) and Shaw (1973) and the endogenous growth literature (King and Levine, 1993a, b), financial development is a positive function of real income and real interest rate. Hence banking sector development function can be specified as:

$$PC = f(RGDPC, RIR) \quad (1)$$

Where *PC* is private sector credit provided by deposit money banks (as a percentage of GDP) as a proxy to banking sector development, *RGDPC* is the real GDP per capita while *RIR* is the real interest rate. However, the real interest rate is omitted from the model specification[31]. Firstly, the sign of the real interest rate is partially a political decision depending on the determination of nominal interest rates. Secondly, data for this variable is inconsistent for developing and emerging countries[32] (Law and Habibullah, 2009). Finally, the examined determinants include inflation which is highly collinear with real interest rate.

In order to investigate other variables that could influence private sector credit, Equation (1) is then extended as follows[33,34]:

$$\ln PC_{it} = \beta_{0i} + \beta_{1i} BL_{it} + \beta_{2i} CL_{it} + \beta_{3i} LAW + \beta_{4i} PRP + \beta_{5i} FCOR_{it} + \beta_{6i} FLO_i + \beta_{7i} TO_{it} + \beta_{8i} REM_{it} + \beta_{9i} \ln RGDPC_{it} + \beta_{10i} INF_{it} + \beta_{11i} MCAP_{it} + \varepsilon_{it} \quad i=1,\ldots,18 \text{ and } t=1,\ldots,10 \quad (2)$$

Where *BL* is banking sector liberalization, *CL* is capital account liberalization, *LAW* is rule of law, *PRP* is property rights protection, *FCOR* is freedom from corruption, *FLO* is a dummy for French legal origin and *TO* is trade openness. Macroeconomic determinants are real GDP per capita (*RGDPC*), remittances received (*REM*) and Inflation (*INF*). In addition, *MCAP* is stock market capitalization as a proxy to capital market development. And ε_{it} is the idiosyncratic error term.

[31]The majority of the empirical studies examining banking sector development do not include real interest rate in their model specification.
[32]Data for real interest rate is not available for all countries in the sample during 2000-2009.
[33]Private sector credit and real GDP per capita are transformed into natural log depending on their graphical representations to smooth high variation across the sample.
[34]The relationship is assumed to be linear.

B. The Data

The data set consists of balanced panel of observations for a sample of 18 emerging economies for the period 2000-2009. The dependent variable is banking sector development proxied by private sector credit (as % of GDP). This variable is collected from the database constructed by Beck and Demirguc-Kunt (2009).

As for the explanatory variables, Mckinnon (1973) and Shaw (1973) and the endogenous growth literature show that financial liberalization promotes financial development, therefore the study examines the impact of banking sector liberalization proxied by credit market regulation index derived from Gwartney, Lawson and Hall (2011). This index focuses on regulatory restraints that limit the freedom of exchange in credit. It is the simple average of four sub-indices that track the presence of restrictions in the following areas (ownership of banks, foreign bank competition, private sector credit and interest rate controls). However the study will recalculate the index after eliminating the sub-index of private sector credit to avoid collinearity. The index ranges from zero to ten where more liberalized banking sectors receive higher scores. Other indices were used in the literature to proxy banking sector liberalization such as financial liberalization indices constructed by Kaminsky and Schmukler (2003), and an index of domestic banking reforms from Abiad, Detragiache and Tressel (2008); however these indices do not cover the period under study.

Klein and Olivei (2008) and Law (2009) find that capital account liberalization has a significant impact on banking sector development. Thus capital account liberalization is added to the determinants proxied by capital account openness index developed by Chinn and Ito (2008). It is a de-jure measure that attempts to measure the intensity of capital controls.

Theory and empirical studies agree that strong legal systems capable of enforcing contracts and protecting investors are robust determinant of banking sector development. Therefore the study adds the rule of law to the explanatory variable. It is proxied by the index for the integrity of the legal system constructed by Gwartney, *et al.* (2011). It assesses the strength and impartiality of the legal system; and the popular observance of the law. The rule of law index ranges from zero to ten where stronger legal systems receive higher scores.

If countries have weak property rights, they are likely to suffer a reduction in the amount and efficiency of investment in physical and human capital as investors will channel their resources to activities that are more secure from the threat of expropriation such as trade (Knack and Kiefer, 1995). Hence, the study uses the Heritage Foundation property rights index which measures the degree to which a country's laws protect private property rights and the degree of their enforcement. It also assesses the likelihood that private property will be expropriated and analyzes the independence of the judiciary, the existence of corruption within the judiciary, and the ability of individuals and businesses to enforce contracts. This index ranges from 0 to 100 where higher values are given to countries that protect property rights more effectively.

Investors in countries with corrupt governments are hindered by uncertainty regarding the credibility of government commitments which results in discouraging investment (Knack and Kiefer, 1995). Thus, the study adds the Heritage Foundation freedom from corruption index to the determinants of banking sector development. The score of this index is derived primarily from Transparency International's Corruption Perceptions Index (CPI) for 2010, which measures the level of corruption in 178 countries. The score of the freedom from corruption index ranges from 0 to 100 where 100 indicates very little corruption while 0 indicates a very corrupt government.

La Porta, Lopez-de-Silanes and Shleifer (2008) find that, compared to English legal origin, French legal origin is associated first with lower investor protection which in turn leads to a less developed financial system, and lower access to finance; second with heavier government ownership and regulation, which may lead to greater corruption, and larger unofficial economy; and finally with higher formalism and less independent judicial systems, which result in unsecured property rights and weaker contract enforcement. Therefore the determinants under study include a dummy for the French legal origin however a dummy for the English legal origin is not added to the analysis to avoid collinearity. Data for legal origin is collected from La Porta, Lopez-de-Silanes, Shleifer and Vishny (1998b).

The interest group theory and other empirical studies have highlighted the positive influence of trade openness on banking sector development (Svaleryd &

Vlachos, 2002; Y. Huang & Temple, 2005; Law & Demetriades, 2006; Law, 2008, 2009). Thus the study examines trade openness proxied by total trade (as % of GDP). Moreover remittances are considered the second most important flow after foreign direct investment to emerging countries. However the impact of remittances on banking sector development remains inconclusive in theory. On one hand, it is argued that remittances recipients may demand financial products to store their excess funds. On the other hand, remittances can have a dampening effect on banking sector development through improving individuals' financial positions as a result they will demand less credit. In addition, remittances may be immediately consumed (Aggarwal, Demirguc-Kunt, & Peria, 2011). Therefore, workers' received remittances are added to the explanatory variables. It is the sum of three items defined in the fifth edition of the IMF's Balance of Payments Manual: workers' remittances, compensation of employees, and migrants' transfers. It is measured as a percentage of GDP.

The literature suggests that economic growth bolsters banking sector development (Arestis & Demetriades, 1997; Shan, *et al.*, 2001; and Hassan, *et al.*, 2011). Hence, the study uses annual data for real GDP per capita based on constant prices of 2000 in USD[35]. Moreover, empirical evidence shows that inflation significantly reduces banking sector development (Boyd, Levine, & Smith, 2001) thus the annual growth rate of the GDP implicit deflator is added to the explanatory variables as a measure of inflation. The source of the four above mentioned variables is the World Development Indicators.

In addition, the study employs stock market capitalization of listed companies as a proxy to capital market development to assess the relationship between capital markets and banking sectors in emerging countries. Data on this variable is collected from the database constructed by Beck and Demirguc-Kunt (2009). Appendix (B) presents the definition and the source of each variable.

[35] Real GDP per capita proxies economic in several studies such as Demetriades and Luintel (1996), Arestis, and Demetriades (1997), Levine (1998), Shan, *et al.* (2001), Arestis, *et al.* (2002), Svaleryd and Vlachos (2002), Cuadro, *et al.* (2003), Y. Huang and Temple (2005), Law and Demetriades (2006), Djankov, *et al.* (2007), Law (2008), Tressel and Detragiache (2008), Law (2009), Law and Habibullah (2009), Assane and Malamud (2010), Y. Huang (2010), Aggarwal, *et al.* (2011), Chowdhury (2011), Voghouei, *et al.* (2011), Becerra, *et al.* (2012).

Descriptive Statistics and Correlations

Table (1) reports summary statistics of the variables employed in the analysis. The dependent variable, private sector credit, ranges from 10.86% in the Russian Federation to a high of 127.56% in Malaysia indicating high sample variation in the degree of banking sector development.

As for the explanatory variables, market capitalization ratio and trade openness show considerable variation with standard deviations of 66% and 43% respectively. Market capitalization ranges from 3.52% in Ecuador to a high of 338.2% in South Africa. While trade openness ranges from 21.7% in Brazil to 220.4 % in Malaysia.

Real GDP per capita also shows significant variation with a standard deviation of USD 1644. Mexico has the highest real GDP per capita, i.e. USD 6333.08, whereas India has the lowest real GDP per capita at USD 450.42.

Table (2) reports the correlation analysis which reveals that there is a statistically significant relationship between trade openness and banking sector development (0.78) followed by freedom from corruption (0.57), property rights protection (0.45), rule of law (0.29) and real GDP per capita (0.19). On the other hand, Inflation is negatively correlated with banking sector development (-0.36) followed by French legal origin dummy (-0.34). Moreover Table (2) shows that banking sector development and capital market development are significantly correlated (0.59).

For the cross-correlation between explanatory variables, there is a significant relationship between real GDP per capita and freedom from corruption (0.6) followed by property rights protection (0.55). In addition, freedom from corruption and property rights protection are significantly correlated (0.75).

Table (1) Descriptive Statistics

	Mean	Standard Deviation	Minimum	Maximum
PC	45.93	28.15	10.86	127.56
BL	7.2	1.44	3.1	10.00
CL	0.27	1.38	-1.86	2.46
TO	73.51	42.98	21.72	220.41
REM	5.004	0.001	22.397	5.584
LAW	5.83	1.75	3.3	10.00
PRP	46.94	15.15	25.00	90.00
FCOR	37.08	12.95	17.00	75.00
FLO	0.667	0.472	0.00	1.00
MCAP	70.97	66.19	3.52	338.2
RGDPC	2654.21	1644.13	450.42	6333.08
INF	7.56	7.83	-7.04	52.86

Table (2) Correlations

	PC	BL	CL	TO	REM	LAW	PRP	FCOR	FLO	MCAP	RGDPC	INF
PC	1.00											
BL	0.11 (1.51)	1.00										
CL	-0.02 (-0.30)	0.09 (1.20)	1.00									
TO	0.78 (16.47)***	0.14 (1.93)	0.07 (0.92)	1.00								
REM	0.22 (1.31)	0.14 (0.18)	-0.21 (3.56)***	0.31 (3.29)***	1.00							
LAW	0.29 (4.03)***	-0.07 (-0.91)	-0.09 (-1.16)	0.12 (1.60)	0.09 (1.26)	1.00						
PRP	0.45 (6.69)***	0.13 (1.78)	0.12 (1.64)	0.23 (3.08)***	-0.14 (-1.62)	0.33 (4.65)***	1.00					
FCOR	0.57 (9.30)***	0.33 (4.64)***	0.16 (2.17)*	0.34 (4.75)***	0.03 (-0.39)	0.41 (5.94)***	0.75 (14.92)***	1.00				
FLO	-0.34 (-4.80)***	-0.04 (-0.60)	0.49 (7.51)***	-0.22 (-3.02)***	-0.4 (4.62)***	0.1 (1.29)	0.06 (0.85)	0.12 (1.64)	1.00			
MCAP	0.59 (9.73)***	0.31 (4.42)***	0.04 (0.57)	0.34 (4.79)***	0.04 (0.73)	-0.01 (-0.12)	0.23 (3.15)***	0.43 (6.27)***	-0.33 (-4.60)***	1.00		
RGDPC	0.19 (2.52)**	0.37 (5.34)***	0.12 (1.64)	0.16 (2.16)*	-0.03 (-5.44)***	0.07 (0.999)	0.55 (8.81)***	0.6 (10.04)***	0.16 (2.19)*	0.24 (3.28)***	1.00	
INF	-0.36 (-5.08)***	-0.13 (-1.71)	-0.13 (-1.71)	-0.23 (-3.08)***	0.02 (-2.75)***	-0.1 (-1.37)	-0.03 (-0.43)	-0.2 (-2.69)***	-0.03 (-0.37)	-0.11 (-1.46)	0.06 (0.78)	1.00

Figures between parentheses are t-statistics for the correlation coefficients. ***, **, * indicates significance at 0.1%, 1% and 5% levels, respectively.

C. Empirical Methodology

1. Random Effect and Feasible Generalized Least Squares

To examine the determinants of banking sector development, Equation (2) is estimated first by using fixed-effects (FE) and random-effects (RE) models. However according to Hausman test, the null hypothesis (H_0) of no correlation between the unobserved effect and the regressors cannot be rejected ($X^2\{10\} = 12.95$, *P-value= 0.226*). Therefore, the RE estimators are consistent and efficient. The results of the RE model is reported in Table (3), column (1)[36]. The study then proceeds to test for the possible presence of multicollinearity, cross-panel heteroscedasticity and autocorrelation.

i. Test for Multicollinearity and Test for Omitted Variables Significance

Collinearity among explanatory variables may lead to overestimating the effect of some explanatory variables while under-estimating the effect of others. According to the RE estimation, real GDP per capita is insignificant on the contrary to the theory which may imply the presence of multicollinearity. Cases of near-collinearity can be detected by conducting auxiliary regressions. Regressing real GDP per capita on the rest of the explanatory variables shows that real GDP per capita is highly correlated with market capitalization and trade openness. Moreover, the correlation results reported in Table (2) reveal that freedom from corruption is highly correlated with property rights protection index and real GDP per capita.

As a result, the model is re-estimated after omitting real GDP per capita and freedom from corruption. Then the study conducts a likelihood ratio test for each variable separately and together to show whether omitting these variables significantly reduces the fit of the model. The test shows that adding real GDP per capita and freedom from corruption to the explanatory variables results in a significant improvement in model fit (*LR* $X^2\{2\}=12.67$, *p-value= 0.002*). Therefore, the study does not omit real GDP per capita or freedom from corruption.

[36]Under RE estimation the intercepts vary while the slopes of parameters are common across panels. On the other hand, Random-coefficients models allow each panel to have its own vector of slopes randomly; however they can be enhanced in further research.

ii. Test for Cross-panel Heteroscedasticity

The study uses Breusch and Pagan Lagrangian multiplier test for heteroscedasticity. The test rejects the H_0 of constant residual variance across panels ($X^2 = 248$, *p-value= 0.000*) while the coefficient estimates can still be unbiased, estimated standard errors can be significantly misleading. Therefore, Equation (2) is re-estimated using robust panel standard errors proposed by the Huber-White sandwich method as most panel studies. The White (diagonal) method is argued to be robust to all forms of heteroscedasticity but it does not account for correlated residuals.

The results of the RE model with White (diagonal) robust standard errors are presented in Table (3), column (2). The results in column (2) differ but not substantially from the RE model estimated without robust standard errors presented in column (1). There exist alterations in the standard errors. Moreover, the significance levels of trade openness and rule of law changed which implies the presence of heteroskedastic error structure.

iii. Test for Autocorrelation

Equation (2) needs to be tested for possible presence of autocorrelation in the error term. Autocorrelation may lead to biases in standard errors thereby less efficient estimators. The study uses a test derived by Wooldridge (2002, p.282-283). The test proceeds by testing the regression with first-differenced variables against their lags. In case of the absence of autocorrelation, then *corr* ($\Delta\varepsilon_{it}$, $\Delta\varepsilon_{it-1}$) = -0.5.

An estimation of the Wooldridge test shows that the H_0 of no first-order autocorrelation is rejected (*F(1,17)= 148.7, p-value=0.00*). Therefore, the model is re-estimated using feasible generalized least squares (FGLS) estimation.

FGLS allows estimation in the presence of AR (1) autocorrelation and heteroskedastic error structures across panels. The method relies on weighting each observation with a factor proportional to the inverse of its error variance. Thus, observations with higher variance are given smaller weights in the estimation. The FGLS model is estimated with standard errors normalized by n-k where n is the number of

observations and k is the number of parameters estimated[37]. The results are reported in Table (3), column (3).

Nevertheless, as shown in Figure (1), there is a trend in the private sector credit of the sample over the period (2000-2009). Hence it is relevant to add a lagged dependent variable to the explanatory variables to account for the dynamic relationship. However, with lagged dependent variables, the FE estimator is inconsistent when the time span is small (Nickell, 1981) and the RE estimator is biased. Another potential problem is endogeneity. As mentioned previously, some studies find evidence on a bi-directional causality between banking sector development and economic growth (Demetriades & Hussein, 1996; Shan, *et al.*, 2001). In this case, the assumption of strict exogeneity is violated therefore the RE and FGLS estimates are inconsistent. As a result, the model is re-estimated using dynamic Generalized Method of Moments (GMM).

2. Dynamic Generalized Method of Moments

After adding a lagged dependent variable to the explanatory variables to account for the dynamic relationship, the econometric model is rewritten in an autoregressive form as follows;

$$Y_{it} = \alpha Y_{i,t-1} + \gamma X_{it} + \mu_i + u_{it} \qquad \text{where i=1,…,18 and t=2,…,10} \qquad (3)$$

Where Y_{it} is nx1 vector of observations of the dependent variable, $Y_{i,t-1}$ is nx1 vector of observations of the lagged dependent variable, X_{it} is nxn matrix of observations of the regressors, γ is nx1 vector of unknown parameters for the regressors, μ_i is the country specific effects, including legal origin dummies, and u_{it} is nx1 vector of the error term. However there is a potential correlation between the lagged dependent variable and the error term as well as the country's specific effects in Equation (3).

The study estimates Equation (3) using dynamic GMM estimator. The following section presents briefly two methods to obtain GMM estimator for dynamic models which are: difference GMM and system GMM.

[37]Greene (2012, p.280) remarks that whether a degree-of-freedom correction improves the small-sample properties is an open question.

i. Difference GMM Estimation

Under this methodology, GMM estimators are obtained after first-differencing the regression equation where equation (3) is transformed into;

$$\Delta Y_{it} = \alpha \Delta Y_{i,t-1} + \beta \Delta X_{it} + \Delta u_{it} \qquad \text{where i=1,…,18 and t=3,…,10} \qquad (4)$$

As a result of differencing, country's specific effects are dropped out of the model. A potential problem with the model of Equation (4) is the correlation between the differenced dependent variable $\Delta Y_{i,t-1}$ and the error term Δu_{it}. This problem can be solved by using higher-order lags of $Y_{i,t-1}$ as instruments for $\Delta Y_{i,t-1}$.

In case the explanatory variables X_{it} are predetermined, i.e. E ($X_{it}\, u_{is}$) $\neq 0$ for s<t and zero otherwise, only $X_{i1, \ldots,} X_{i(s-1)}$ are used as instruments in the differenced equations for period s. whereas if X_{it} are strictly exogenous then all the *X's* are valid instruments for all the equations (Arellano and Bond, 1991).

For the GMM estimator to yield unbiased and consistent estimators requires the validity of the following moment conditions:

$$E(Y_{i,t-s}\, \Delta u_{it}) = E(X_{i,t-s}\, \Delta u_{it}) = 0 \qquad \forall\ s>1;\ t=3,\ldots,10$$

ii. System GMM Estimator

Arellano and Bover (1995) and Blundell and Bond (1998) show that lagged levels of the variables are weak instruments[38] for first-differences and can induce biases in finite samples. Alternatively, they propose system GMM (Sys-GMM) estimator which can be used to solve the weak instruments problem.

The Sys-GMM estimator adds a system of equations in levels to the first-differenced equations. Lagged differences of Y_{it} and X_{it} are used as instruments for equation in levels (Equation (3)), whereas lagged levels of Y_{it} and X_{it} are used as instruments for equation in first-differences (Equation (4)). Additional moment conditions are required: $E(\Delta Y_{i,t-1}\, u_{it}) = E(\Delta X_{i,t-1}\, u_{it}) = 0$ t=3,…,10

[38]Weak instruments are weakly correlated with the endogenous variables in such a case, the sampling distributions of GMM are in general non-normal and standard GMM estimates, hypothesis tests and confidence intervals are unreliable.

As a result, the study estimates Equation (3) using the Sys-GMM estimator[39] with robust standard errors[40]; the results are presented in Table (3), column (4). To avoid potential endogeneity with real GDP per capita, higher-order lags are used as instruments. The rest of the explanatory variables are assumed to be strictly exogenous. Since large number of instruments can over fit instrumented variables (Roodman, 2006), only the second lags of private sector credit and real GDP per capita are used as instrument in the difference equation[41].

Specification Tests of Sys-GMM Estimator

This section tests the consistency of the GMM estimator. First, the Hansen (1982) J-test statistic for over-identifying restrictions is used. The test fails to reject the H_0 of no over-identifying restrictions for the GMM estimator (*p-value=0.073*).

The second test examines the assumption of no second-order autocorrelation in the idiosyncratic error term in first-differences using a test proposed by Arellano and Bond (1991). The presence of second-order autocorrelation in differences implies the presence of first-order autocorrelation in levels (Roodman, 2006). The test fails to reject the H_0 of no second-order autocorrelation (*p-value= 0.993*). Therefore, both tests reveal that the instrument set used is valid.

[39] System GMM estimation has been applied by several studies in examining the determinants of banking sector development such as Y. Huang and Temple (2005), Tressel and Detragiache (2008), W. Huang (2010), Aggarwal, *et al.*(2011), Oke, *et al*. (2011), Voghouei, *et al*.(2011), and Becerra, *et al.* (2012).

[40]The resulting standard error estimates are consistent in the presence of any pattern of heteroscedasticity and autocorrelation within panels.

[41] The rule of thumb is to keep the number of instruments less than or equal to the number of groups (Law and Demetriades, 2006; Law and Habibullah, 2009). In addition the study uses collapsed instrument set which can avoid the bias that arises as the number of instruments climbs toward the number of observations small samples.

V. ESTIMATION RESULTS

Table (3) reports the results of Sys-GMM estimation with robust standard errors (column 4) excluding the constant term. The lagged dependent variable (PC_{t-1}) is statistically significant which emphasizes the dynamic nature of private sector credit. Therefore, present values of private sector credit depend on its past values.

In accordance with theory, the results reveal that economic growth has a positive significant impact on banking sector development. Emerging countries have high growth prospects which lead to the burgeoning of investments thereby the demand for credit increases. In addition, inflation adversely affects banking sector development. High inflation discourages savings due to lower real interest rates. Moreover, investment declines since inflation lowers the real return on the invested capital.

Workers' remittances positively affect banking sector development which implies that remittances recipients may demand financial products to store their excess funds. In addition, households that receive their remittances through banks have greater potential to learn about and demand other financial products. Also, remittance transfer services allow banks to reach out to recipients with no or limited access to financial intermediation services. All of the above can enhance the banks' ability to mobilize savings and extend credit to the private sector.

In terms of institutional and legal characteristics, the results show that the rule of law has a significant influence on banking sector development. A legal environment, that is capable of enforcing contracts, encourages investors as they feel that their investments are protected hence the demand for credit rises. On the other hand, the results show that freedom from corruption and property rights protection are not statistically significant determinants of banking sector development[42].

[42] Under FGLS estimation, French legal origin dummy is negatively significant at 1% level of significance. This result is in line with theory and empirical evidence (La Porta, *et al.*, 2008). French legal origin is associated with less judicial independence and heavier government ownership and regulation, higher formalism, and weaker investor protection compared to English legal origin hence it has an adverse effect on banking sector development. Therefore French legal origin countries should enhance judicial independence; lessen procedural formalism and issue laws that ensure the protection of investors.

Emerging countries undertook several measures to liberalize the banking sector through removing interest rates ceilings; abolishing barriers to entry for private ownership of banks; and allowing foreign banks to operate in the domestic market, in addition to other measures to liberalize the capital account and remove trade restrictions. However the empirical results show that financial liberalization as well as trade openness are insignificant in promoting banking sector development. This result implies that the emphasis on the importance of liberalization policies should be reassessed while taking into consideration the quality of the current institutional infrastructure and the soundness of macroeconomic policies.

Moreover, the results show that market capitalization has a robust impact on private sector credit; which implies that the capital market in emerging economies complements the banking sector. So the provision of alternative financing options through the capital market does not compete with the banking sector. Besides, banks themselves can benefit by trading in the capital market.

Table (3) Estimation Results: Dependent Variable Ln (Private Sector Credit/GDP)

Estimation Method	Random Effect	Random Effect with Robust Standard Errors	FGLS	Sys-GMM With Robust Standard Errors
Ln (PC_{t-1})				0.652 (3.8)***
Ln(RGDPC)	0.073 (0.65)	0.073 (0.47)	0.139 (2.3)***	0.241 (2.2)**
INF	-0.013 (-6.32)***	-0.013 (-4.51)***	-0.005 (-3.69)***	-0.008 (-2.59)***
REM	0.005 (0.46)	0.005 (0.55)	0.012 (1.68)*	0.012 (1.92)*
LAW	0.032 (1.69)*	0.032 (1.31)	0.054 (3.99)***	0.035 (2.15)**
PRP	0.005 (2.59)***	0.005 (2.06)**	0.002 (1.33)	0.002 (0.93)
FCOR	0.013 (3.33)***	0.013 (2.15)**	0.009 (3.87)***	-0.006 (-1.32)
FLO	-0.373 (-1.95)*	-0.373 (-2.42)***	-0.259 (-3.87)***	
CL	0.036 (1.34)	0.036 (0.93)	-0.012 (-0.73)	-0.039 (-1.59)
TO	0.003 (1.93)*	0.003 (1.27)	0.004 (5.12)***	0.001 (0.72)
MCAP	0.002 (6.33)***	0.002 (3.71)***	0.002 (5.88)***	0.002 (2.98)***
Observations	180	180	180	162
R-squared	42.5	42.5		
Wald X^2	153.7	471.1	620.33	738.7
No. of Instruments				14
Hansen Test				5.24 (0.073)
m1				-0.19 (0.85)
m2				0.01 (0.993)

Figures between parentheses are z-statistics except for Hansen test and 1st order (m1) and 2nd order (m2) autocorrelation tests which are p-values. ***, ** and* indicate significance at the 1%, 5% and 10% levels, respectively.

VI. CONCLUSION

Finance plays a crucial role in the economy. Well-functioning financial systems allow the efficient allocation of capital; diversification of risk; reduction of transaction costs and information asymmetry in addition to monitoring investments (Fry, 1995; Levine, 2004; Buera, *et al.*, 2009). Hence, financial development becomes a policy priority for governments. Nevertheless, many countries remained financially underdeveloped (Law & Habibullah, 2009).

As a result, theories were developed to investigate the reasons behind financial development. The models of Mckinnon (1973) and Shaw (1973) and endogenous growth literature emphasize that government intervention in the form of financial repression policies is the main source of financial under-development. On the other hand, Rajan and Zingales (2003), in their interest group theory, show that trade and financial openness requires the development of financial system to meet the increasing demand of domestic producers on credit. Moreover, the determinants of financial development receive great attention in the empirical literature however the results provide mixed evidence still.

Therefore, the objective of this study is to investigate the determinants of financial development using in a sample of 18 emerging economies. It focuses on the development of the banking sector since the literature suggests that it is the main pillar of the financial system in most emerging economies (Levine & Zervos, 1998; Levine, 2002). The study employs private sector credit to proxy banking sector development.

The study adds to the existing literature by employing a different combination of banking sector determinants which are: financial liberalization variables including banking sector and capital account liberalization; openness to trade; institutional and legal variables including rule of law, freedom from corruption, property rights protection and legal origin; and finally, macroeconomic variables including remittances, real GDP per capita, and inflation. In addition, the study uses new proxies for banking liberalization, property rights protection and freedom from corruption. Moreover, the study assesses the relationship between the capital market and the banking sector in

emerging economies.

In this study, the random effect and the feasible generalized least squares estimations are employed to analyze the sources of banking sector development. However, it is relevant to add a lagged dependent variable to the explanatory variables to account for the presence of a dynamic relationship; in addition there is a potential endogeneity of economic growth. Hence, the study employs the dynamic GMM estimator proposed by Arellano and Bover (1995) and Blundell and Bond (1998).

The findings suggest that, in emerging countries, economic growth and workers' remittances have a positive significant impact on banking sector development while inflation affects the latter adversely. On the other hand, financial liberalization and trade openness are ineffective in promoting banking sector development. Moreover, the rule of law is a robust determinant of banking sector development. Finally, the results provide evidence on the complementary relationship between the capital market and the banking sector in emerging economies.

In terms of policy implications, the study suggests that promoting economic growth and establishing strong legal systems capable of enforcing contracts and protecting investors' rights enhances banking sector development in emerging economies; and should precede financial liberalization and trade openness. Moreover the development of the banking sector should be accompanied with measures to develop and promote the capital market.

REFERENCES

Abiad, A., Detragiache, E. and Tressel, T. (2008). *A New Database of Financial Reforms* (IMF Working Paper No. 266).Washington DC: IMF.

Abzari, M., Zarei, F. and Esfahani, S. S. (2011). Analyzing the Link between Financial Development and Foreign Direct Investment among D-8 Group of Countries, *International Journal of Economics and Finance, 3(6),* 148-156.

Acemoglu, D. and Johnson, S. (2005). Unbundling Institutions, *Journal of Political Economy, 113(5),* 949-995.

Aggarwal, R., Demirgüç-Kunt, A., Pería, M. S. M. (2011). Do remittances promote financial development?, *Journal of Development Economics, 96,* 255-264.

Arellano, M. and Bond, S. (1991). Some Tests of Specification for Panel Data: Monte

Carlo Evidence and Application to Employment Equations, *Review of Economic Studies, 58,* 277-297.

Arellano, M., and Bover, O. (1995). Another look at the instrumental variable estimation of error-components models. *Journal of Econometrics, 68,* 29–51.

Arestis, P. and Demetriade, P. (1997). Financial Development and Economic Growth: Assessing the Evidence, *The Economic Journal, 107(May),* 783-799.

Arestis, P., Demetriades, P., Fattouh, B., and Mouratidis, K. (2002). The Impact of Financial Liberalization policies on Financial Development: Evidence From Developing Countries, *International Journal of Finance and Economics, 7,* 109-121.

Assane, D. and Malamud, B. (2010). Financial development and growth in sub-Saharan Africa: do legal origin and CFA membership matter?, *Applied Economics,42,* 2683–2697.

Bagehot, W. (1873), Lombard Street, A Description of the Money Market (1962 Edition). Illinois: Richard D. Irwin.

Becerra, O., Cavallo, E. and Scartascini, C. (2012).The politics of financial development: The role of interest groups and government capabilities, *Journal of Banking & Finance, 36,*626–643.

Beck, T. and Demirgüç-Kunt, A. (2009). *Financial Institutions and Markets Across Countries and over Time: Data and Analysis* (World Bank Policy Research Working Paper No. 4943).Washington DC: World Bank.

Bentham, J. (1787). *Defense of Usury.* London: T. Payne & Sons.

Blundell, R., & Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models, *Journal of Econometrics, 87,*115–143.

Bordo, M. D. and Rousseau, P. L. (2011). *Historical evidence on the finance-trade-growth* nexus (NBER Working Paper 17024). Massachusetts: NBER.

Boyd, J. H., Levine, R. and Smith, B. D. (2001). The Impact of Inflation on Financial

Sector Performance, *Journal of Monetary Economics, 47,* 221–48.

Buera, F. J., Kaboski, J. P., and Shin, Y. (2011). Finance and Development: A Tale of Two Sectors, *American Economic Review, 101(5),* 1964-2002.

Central Bank of Egypt [CBE]. (2010). Annual Report 2009/2010.

Central Bank of Egypt [CBE]. (2011). Annual Report 2010/2011.

Chinn, M. D. and Ito, H. (2008). A New Measure of Financial Openness, *Journal of Comparative Policy Analysis, 10(3),* 309 – 322.

Chowdhury, M. B. (2011). Remittances flow and financial development in Bangladesh, *Economic Modelling, 28,* 2600-2608.

Christopoulos, D. K., and Tsionas, E. G. (2004). Financial development and economic growth: Evidence from panel unit root and cointegration tests, *Journal of Development Economics, 73,* 55–74.

Cihak, M., Demirgüç-Kunt, A., Feyen, E., and Levine, R. (2012). *Benchmarking Financial Systems around the World.* Washington DC: World Bank.

Cuadro, L., Gallego, S. and García Herrero, A. (2003). *Why do countries develop more financially than others? The role of the central bank and banking supervision.* Banco de Espana.

Demetriades, P. O. and Hussein, K. (1996). Does Financial Development Cause Economic Growth? Time-series Evidence from 16 Countries, *Journal of Development Economics, 51*, 387-411

Demetriades, P. O. and Luintel, K. B. (1996). Financial Development, Economic Growth and Banking Sector Controls: Evidence from India, *The Economic Journal, 106(435),* 359-374

Demirguc-Kunt, A. and Levine, R. (2001). *Bank-based and market-based financial systems: Cross-country comparisons.*

Djankov, S., McLiesh, C. and Shleifer, A. (2007). Private credit in 129 countries, *Journal of Financial Economics, 84(2007),* 299-329.

Erosy, I. (2011). The Impact of Financial Openness on Financial Development, Growth, and Volatility in Turkey: Evidence from the ARDL Bounds Tests, *Ekonomska istrazivanja, 24(3),* 33-44.

Financial Access Survey. (2012). Washington DC: IMF.

Frankel, J. A. and Romer, D. (1999). Does trade cause growth?, *American Economic Review, 89,* 379-98.

Fry, M. J. (1995). *Money, Interest and Banking in Economic Development* (2nd ed.). Maryland: The Johns Hopkins University Press.

Ghosh, A. R., Chamon, M., Crowe, C., Kim, J. I., Ostry, J. D. (2009). *Coping with the Crisis: Policy Options for Emerging Market Countries* (IMF Staff Position Note 09/08), Washington DC: IMF.

Global Financial Development Report 2013: Rethinking the Role of the State in Finance. (2012). Washington DC: World Bank.

Greene, W. H. (2012). Econometric Analysis (7th ed.). Upper Saddle River, NJ:

Prentice Hall.

Guillaumont Jeanneney, S. and Kpodar, K. (2011). Financial Development and Poverty Reduction: Can There be a Benefit without a Cost? *Journal of Development Studies, 47*(1), 143–163.

Gwartney, J., Lawson, R. and Hall, J. (2011). *Economic Freedom of the World: Annual Report 2011*. Canada: Fraser Institute.

Haber, S., North, D., and Weingast, B. (2008). *Political Institutions and Financial Development*. Stanford: Stanford University Press.

Hansen, L. 1982. Large sample properties of generalized method of moments estimators, *Econometrica*, 50(3), 1029-54.

Hassan, M. K., Sanchez, B. and Yu, J. (2011). Financial development and economic growth: New evidence from panel data. *The Quarterly Review of Economics and Finance, 51,* 88-104.

Huang, W. (2006). Emerging Markets Financial Openness and Financial Development (Discussion Paper No. 06/588). Bristol: University of Bristol.

Huang, Y. and Temple, J. (2005). *Does external trade promote financial development*? (CEPR Discussion Papers No.5150).

Huang, Y. (2010). Political Institutions and Financial Development: An Empirical Study, *World Development, 38(12),* 1667–1677.

Kaminsky, G. and Schmukler, S. (2003). *Shot-run pain, long-run gain: the effects of financial liberalization* (IMF working paper 34). Washington DC: IMF.

Keynes, J. M. (1936). *The general theory of employment, interest and money.* London: Macmillan.

Kim, D. H., Lin, S.C., Suen Y. B. (2010). Dynamic effects of trade openness on financial development, *Economic Modelling, 27,* 254-261.

King, R. and Levine, R. (1993a). Finance, Entrepreneurship and Growth: Theory and Evidence, *Journal of Monetary Economics, 32(3),* 513-542.

_____ (1993b). Finance and growth: Schumpeter might be right, *Quarterly Journal of Economics, 108,* 717-737.

Klein, M. W., and Olivei, G. P.(2008). Capital account liberalization, financial depth, and economic growth, *Journal of International Money and Finance, 27*, 861–875.

Knack, S. and Kiefer, P. (1995). *Institutions and Economic Performance: Cross-Country Tests Using Alternative Institutional Indicators.* Washington DC: World Bank.

Kpodar, K. and Gbenyo, K. (2010). *Short- Versus Long-Term Credit and Economic*

Performance: Evidence from the WAEMU (WP 115). Washington DC: IMF.

La Porta, R., Lopez-de- Silanes, F. and Shleifer, A. (2002). Government Ownership of Banks, *The Journal of Finance, LVII (1),* 265-301.

_____. (2008). The Economic Consequences of Legal Origins, *Journal of Economic Literature, 46(2),* 285-332.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., and Vishny, R. W. (1997). Legal Determinants of External Finance, *The Journal of Finance, LII (3),* 1131-1150.

_____. (1998a). Law and finance. *Journal of political economy, 106,* 1113–1155.

_____. (1998b). The Quality of Government, *The Journal of Law Economics and Organization, 15(1),* 222-279.

Law, S. H. (2008). Does a Country's Openness to Trade and Capital Accounts Lead to Financial Development? Evidence from Malaysia, *Asian Economic Journal, 22(2),* 161-177.

_____. (2009). Trade Openness, Capital Flows and Financial Development in Developing Economies, *International Economic Journal, 23(3),* 409-426.

Law, S. H. and Demetriades, P. (2006). *Openness, Institutions and Financial Development* (Working Paper 0012).London: University of London.

Law, S. H. and Habibullah, M. S. (2009). The Determinants of Financial Development: Institutions, Openness and Financial Liberalization. *South African Journal of Economics, 77*(1), 45-58.

Levine, R. (1998). The Legal Environment, Banks, and Long-Run Economic Growth, *Journal of Money, Credit and Banking, 30(3),* 596-613.

_____. (2002) Bank-based versus market-based financial systems: which is better? *Journal of Financial Intermediation, 11(4),* 398–428.

_____. (2004). *Finance and Growth: Theory and Evidence,* Massachusetts: NBER.

Levine, R. and Zervos, S. (1998) Stock markets, banks and economic growth, *American Economic Review, 88(3),* 537–558.

Levine, R., Loayza, N. and Beck, T. (2000). *Financial Intermediation and Growth: Causality and Causes.* Washington DC: World Bank.

Lin, J. Y. (2011). New Structural Economics: A Framework for Rethinking Development. *The World Bank Research Observer. 26 (2),* 193–221.

Locke, John. (1965). *Further Considerations Concerning Raising the Value of Money* (2nd ed.). London: A. & J. Churchil.

Lucas, R. E. (1988). On the Mechanics of Economic Development, *Journal of Monetary Economics, 22*, 3-42.

Marshall, M. G., and Jaggers, K. (2009). *Polity IV Project Country Reports*. CIDUM, University of Maryland.

McKinnon, R. I. (1973). *Money and Capital in Economic Development.* Washington, DC: Brookings Institution.

Mody, A. (2004). *What is an emerging market?* (IMF WP 04/177), Washington, DC: IMF.

Nickell, S. (1981).Biases in dynamic models with fixed effects, *Econometrica, 49*, 1417–1426.

Obamuyi, T. M. and Demehin, J. A. (2012). Interest rate reforms and financial deepening in Nigeria, *The International journal of Business and Finance Research, 6(2),* 81-90.

Oke, B. O., Uadiale, O. M., and Okpala, O. P. (2011). Impact of Workers' Remittances on Financial Development in Nigeria, *International business Research, 4(4),* 218-225.

Rajan, R. G. and Zingales, L. (2003). The great reversals: the politics of financial development in the twentieth century, *Journal of financial economics, 69(1), 5.*

Robinson, J. (1952). The Generalization of the General Theory. In *the Rate of Interest and Other Essays*. London: MacMillan.

Roe, M. J. and Siegel, J. I. (2011). Political instability: Effects on financial development, roots in the severity of economic inequality, *Journal of Comparative Economics, 39(3)*, 279.D.

Roodman, D. (2006). *How to Do xtabond2: An Introduction to "Difference" and "System" GMM in Stata*. Center for Global Development.

Sachs, J. and Warner, A. (1995). Economic reform and the process of global integration, *Brookings Papers of Economic Activity 1*, 1–118.

Schumpeter, J. A. (1912). *Theorie der wirtschaftlichen Entwicklung.* Leizpzig: Duncker & Humblot. [*The Theory of Economic Development; An Inquiry into Profits, Capital, Credit, Interest, and the Business Cycle*. Translated by Redvers Opie. Cambridge, Mass.: Harvard University Press, 1934]

Shan, J. Z., Morris, A. G. and Sun, F. (2001). Financial Development and Economic Growth: An Egg-and-Chicken Problem?, *Review of International Economics, 9(3),* 443-454.

Sharma, P. and Nguyen, DT. (2010). Law and banking development in a South Pacific island economy: the case of Fiji, 1970-2006, *Journal of the Asia Pacific Economy*,

12(5), 192-216.

Shaw, E. S. (1973). *Financial Deepening in Economic Development.* New York: Oxford University Press.

Smith, A. (1776), *An Inquiry into the Nature and Causes of the Wealth of Nations.* London: W. Strahan& T. Cadell.

Svaleryd, H. and Vlachos, J. (2002). Markets for risk and openness to trade: how are they related? *Journal of International Economics, 57,* 369-395.

Tennant, D. and Folawewo, A. (2009). *Macroeconomic and Marketing Determinants of Banking Sector Interest Rate Spreads: Empirical Evidence From Low and Middle Income Countries.*

Tobin, J. (1965). Money and economic growth, *Econometrica, 33,* 671-684.

Tressel, T. and Detragiache, E. (2008). *Do Financial Sector Reforms Lead to Financial Development? Evidence from a New Dataset* (WP 265). Washington DC: IMF.

Voghouei, H., Azali, M. and Law, S. H. (2011). Does the Political Institutions matter for Financial Development? *ECONOMIC PAPERS, 30(1),* 77–98.

Wooldridge, J. M. (2002). Econometric Analysis of Cross Section and Panel Data. Massachusetts: MIT.

World Bank. (2009). *World Development Indicators.* Retrieved March15, 2012, from http://www.data.worldbank.org.

Yu, H. and Gan, PT. (2010). The Determinants of banking Sector Development: Malaysian Experience, *International Research Journal of Finance and Economics, 35,* 29-35.

Zoli, E. (2007). *Financial Development in Emerging Europe: The Unfinished Agenda* (WP 245).Washington DC: IMF.

APPENDIX (A): EMPIRICAL LITERATURE REVIEW ON THE DETERMINANTS OF BANKING SECTOR DEVELOPMENT

Study	Methodology	Countries	Dependent Variable(s)	Explanatory Variables	Data type	Time Frame	Main Findings
Demetriades and Luintel (1996)	Unrestricted error correction model and exogeneity tests	India	Real GDP/capita Bank deposit liabilities/nominal GDP number of bank branches	interest rate restrictions, reserve and liquidity requirements directed and concessionary lending programs Investment /capita[43]	Annual	1961-1991	Financial repression in the banking sector has a negative impact on financial deepening except lending rate ceilings which has a small positive effect. Furthermore financial development and economic growth are jointly determined.
Arestis, and Demetriades (1997)	Johansen's cointegration	Germany and the USA	Real GDP per capita	Log M2/nominal GDP[44] Log private credit/nominal GDP[45] stock market capitalization/ GDP index of stock market volatility	quarterly data	1979 (1)-1991 (4)	In the US: real GDP is positively contributing to banking sector and capital market development. in Germany: there is a uni-directional causality from financial development to real GDP

[43]Included in the marginal process of GDP/capita
[44]This variable is used in the analysis of Germany data
[45]This variable is used in the analysis of the United States data

		South Korea	log bank deposits/ nominal GDP	log real GDP per capita ex-ante real deposit rate of interest log of capital stock per head measure of financial repression	annual	1956-94	Financial repression has a positive impact on banking sector development and growth and the real interest rate has a small positive effect.
La Porta, Lopez-de-Silanes, Shleifer and Vishny (1997)	Ordinary least square (OLS) regression	49 countries whose legal origins are English, French, German, and Scandinavian.	Equity Market development: Stock Market capitalization held by minorities/GNP Listed domestic firms/population Initial public offerings of shares/population Debt market development: (bank debt to private sector+ face value of corporate bonds)/GNP	legal origin GDP growth Log GNP Rule of Law Anti-director rights One-share=one-vote	-	-	The legal rules protecting investors and their enforcement have significant effect on the size and extent of both equity and debt markets. The results show that French civil law countries have the weakest investor protections and the least developed financial markets.
Levine (1998)	OLS	42 developed and developing countries divided by legal origin.	Credit to the private sector/GDP	Creditor rights Efficiency of contract enforcement Legal origin Initial log of real GDP/capita	Annual	1976-93	The results show that countries with legal system protecting creditor rights and enforces contracts have better developed banking sector.

Shan, Morris and Sun (2001)	Vector autoregression (VAR) and granger causality test	9 OECD countries and China	Private credit/ GDP	Real GDP per capita Total factor productivity (imports+ Exports)/GDP Total capital expenditure/GDP CPI Index of stock market prices	Annual	1960/70-1998 And subsample from mid-1980-1998	Growth leads to financial development in three countries There is a bidirectional causality in half of the countries No evidence that financial development leads to growth
Arestis, Demetriades, Fattouh and Mouratidis (2002)	Conditional Parsimonious Vector error correction model	6 developing countries (Greece, Thailand, Philippines, Korea, Egypt, India)	Nominal liquid liabilities/nominal GDP.	Log real GDP per capita real interest rate interest rate restraints reserve and liquidity requirement ratios	Annual	1955 - 1997	Real interest rate has a positive, significant long-run effect on banking sector development except South Korea and Thailand. Financial policies have direct significant effects except in South Korea, Thailand and Greece. The sign of the coefficient varies considerably across countries; this variation may reflect institutional differences.
La Porta, Lopez-de-Silanes, and Shleifer (2002)	OLS regression	92 developing and developed countries divided by legal origin	Financial development indicators: Δ private credit/GDP Δ liquid liabilities/GDP Δ commercial bank assets/ total bank assets	Government ownership of banks index of 1970 Initial per capita GDP of 1960 Initial Financial development indicator of 1960	-	1960-1995	Initial level of financial development is negatively correlated with its own subsequent growth. Government ownership of banks reduces subsequent financial development. Its effect is significant for the

			Δ stock market capitalization/GDP Change of stock market capitalization/GDP Access of firms to credit Efficiency of the banking system Instability				growth of private credit and change of stock market capitalization ratios to GDP; however insignificant for other measures.
Svaleryd and Vlachos (2002)	OLS regression and Granger causality test	80 countries	Sachs-Warner (1995) index[46] Trade openness Import duty revenue/total imports Pre-Uruguay round non- tariff trade barriers	private credit/GDP liquid liabilities/GDP stock market capitalization/GDP GDP/capita Land area Distance to 20 major trading economies Population Region (OECD, East Asia, Latin America and Sub-Saharan Africa)	-	1960-1994	The results show positive, significant and bidirectional causality between trade openness and financial development
Cuadro, Gallego and García Herrero (2003)	OLS	79 countries (21 industrial and 58 emerging)	financial development indicator consisting of: liquid liabilities of banks and other deposit-taking	Central bank Involvement in payments system Lender of last resort Objectives Regulation and	-	-	The results show that a relatively large involvement of the central bank in the financial system contributes to financial development in all countries. In the industrial country group,

[46]It is an indicator for the country's openness to trade. The fraction of years between 1950 and 1994 when the country is judged as open is used to construct the index.

	institutions, bank credit to the private sector, stock market capitalization, and Bonds outstanding, all as a percentage of GDP the inverse of the spread between banks' lending and deposit rates, the inverse of the net interest margin, Inverse of banks' overhead costs. the turnover of the stock exchange and the number of listed companies	supervision Quality of Regulation Supervisory Enforcement Independence of Supervisors Control Variables: The rule of law a creditors' rights index index of economic freedom deposit insurance scheme, financial system structure foreign banks participation bank concentration, financial crisis after liberalization per capita GDP (PPP) gross domestic saving/GDP inflation fiscal deficit/GDP exchange rate regime	both broader central bank objectives and lender of last resort function are found to be beneficial. Moreover, high quality regulation and supervision is beneficial. For emerging countries, the central bank involvement in the payment system, as well as broader central bank objectives enhance financial development. As for supervisory independence, it only contributes to financial development if a relatively solid institutional infrastructure is in place.

Y. Haung and Temple (2005)	OLS GMM	88 countries	Overall Financial development indicator: Liquid liabilities/GDP Private credit/GDP Bank assets/banks and central bank assets Overhead cost/total bank asset Net interest margin Market capitalization/GDP Total value traded/GDP Turnover ratio Average Liquid liabilities/GDP and Market capitalization/GDP Financial efficiency Extent of bank based intermediation Equity market development Financial depth	Trade openness ((exports+ imports)/GDP) at current and international prices Natural propensity to trade Log real GDP per capita legal origin	annual	1960-1999	Trade openness has significant positive impact on financial development in lower income countries
W. Huang (2006)	Within-group fixed effects and first differencing, First-difference GMM	35 emerging countries	Financial development index: Private credit/GDP Deposit money bank assets/(assets of deposit money and	Financial openness index: Market capitalization of IFC Investible index to IFC Global index Number of firms in IFC	Annual	1976-2003	Financial openness is the key determinant of cross-country differences in financial development. Strong evidence that the relationship between openness

			central bank) Total bank assets/GDP Liquid liabilities/GDP Market capitalization/GDP Stock market turnover Stock value traded/GDP	Investible index to IFC Global index. FDI/GDP Private capital flows/GDP Control variables: Country risk government stability, corruption, law and order, bureaucracy quality, democratic accountability, exchange rate stability, and inflation rate trade openness			and development exists in stock markets. The relationship between financial openness and banking sectors is not robust to different indicators of financial openness.
Law and Demetriades (2006)	GMM estimation Pooled mean group (PMG) estimation.	43 developing countries	Log banking sector development: liquid liabilities/GDP private sector credit/GDP domestic credit provided by banking sector/GDP Log capital market development: stock market capitalization/GDP total share value traded/GDP Number of companies listed/total population.	Log real GDP per capita, Log institutional quality (Political Risk Service (PRS) indicators) Log capital inflows: (private capital inflows; and capital account liberalization indicator constructed by Chinn and Ito (2002)) Log trade openness: (total trade as a ratio of GDP and import duties as a ratio of total imports)	Annual	1980-2001	The findings show that in middle-income countries, trade promotes financial development; and the effect is smaller in low-income economies. On the other hand, capital inflows have a positive effect on financial development, especially capital market development in middle-income countries. The findings support the hypothesis that the combination of both financial and trade openness exerts an independent influence on financial

				Log interaction term: Capital inflows and trade openness			development. The findings also suggest that institutional quality is a robust and significant determinant of financial development. The findings are robust to alternative measures of financial and trade openness, as well as estimation methods.
Djankov, McLiesh, and Shleifer (2007)	OLS regression	129 developed and developing countries	Private credit/GDP	Credit rights index Public registry Private bureau Information sharing Log GDP Log GDP per capita GDP per capita growth Inflation Contract enforcement days Legal origin Religion	-	1978-2003	Legal creditor rights and information-sharing institutions are statistically significant determinants of banking sector development.
Klein and Olivei (2008)	OLS regression	95 countries (21 OECD countries and 74 non-OECD countries)	liquid liabilities/GDP Private credit/GDP	capital account liberalization indicator trade openness region oil-producing nation	Annual	1986–1995 and 1976–1995	There is a statistically significant effect of open capital accounts on banking sector development and economic growth. However the benefits of capital account liberalization are only fully realized in the presence of adequate institutions and sound macroeconomic policies.

Law (2008)	bounds test proposed by Pesaran*et al.* (2001)	Malaysia	banking sector development: liquid liabilities/GDP private sector credit/GDP domestic credit provided by banking sector/GDP capital market development: stock market capitalization/GDP Number of companies listed/total population in million.	real GDP per capita, rule of law, financial openness, as a proxy for capital account openness, trade openness, dummy variable to consider the possible structural break of the 1997–1998 East Asian financial crisis, interaction term between financial openness and trade openness	annual	1970-2004	Trade openness and capital account openness are positively significant determinants of financial development. However, there is no empirical support of the hypothesis that the simultaneous opening of both trade and capital accounts is necessary for financial development to take place. The evidence is valid for different measures of financial development.
Tressel and Detragiache (2008)	OLS System GMM Difference GMM	91 developed and developing countries	Private sector credit/GDP	index of domestic banking reforms from Abiad, Detragiache and Tressel (2008) log lagged private sector credit/GDP Inflation GDP per capita Fiscal balance/GDP Index of securities market reforms from Abiad, *et al.* (2008) Index of international capital flows liberalization from Abiad, *et al.* (2008)	Annual	1973–2005	Reforms have a significant positive impact on banking sector development, only in countries with institutions protecting property rights

				Average tariff level Legal origin Polity IV index of constraints on the executive. Index of creditors' rights protection from Djankov, *et al.* (2007) Contract enforcement (days) Indices of external and internal conflicts from International Country Risk Guide (ICRG)[47]			
Law (2009)	GMM	40 developing countries	Banking sector development: Private sector credit Liquid liabilities Domestic credit Aggregate finance development: finance-activity: (private sector credit times the total share value traded ratios) finance-size: (private credit sector times the stock market capitalization ratios)	Real GDP per capita Trade openness Capital flows Competition (manufacturing value added per worker) Indicators of Institutions: Corruption Rule of law Bureaucratic quality Government repudiation of contracts Risk of expropriation	Annual data averaged over five-year period	1980-2003	The findings reveal that trade openness and capital flows are significant determinants of banking sector development. In addition the simultaneous opening of both the trade and capital accounts also appears to have positive impacts on banking sector development. The evidence also suggests that openness leads to higher financial development through institutional quality and competition channels.

[47]It is a monthly publication of Political Risk Services (PRS).

Law and Habibullah (2009)	GMM and the pooled mean group (PMG) estimator	27 developed and developing economies divided into two groups (the G-7, Europe, East Asia and Latin America)	Private sector credit / GDP Stock market capitalization/GDP	Log real GDP per capita Log institutional quality indicators Log trade openness (total trade/GDP) Financial liberalization indices from Kaminsky and Schmukler (2003)	Annual	1980-2001	Real GDP per capita and institutions are significant determinants of banking sector and capital market development Trade openness is more prominent in promoting capital market development Financial liberalization programs are more responsive in developed economies.
Assane and Malamud (2010)	OLS	36 Sub-Saharan African countries divided into: 12 English legal origin countries, 12 French legal origin countries members in the CFA currency union, and 12 French legal origin not CFA members.	Log quasi-liquid liabilities(time deposits)/GDP Log liquid liabilities(M2)/GDP Log credit to the private sector/GDP Log deposit bank assets/ sum of deposit bank and central bank assets financial retardation: Currency/GDP	Log Per capita income French legal origin, member in CFA French legal origin, not CFA member Inflation over 5 year period	Annual	1965-2000	Financial development in English legal origin countries is higher than French legal origin countries in Sub-Saharan Countries. Currency union membership tends to hinder financial development. Financial development contributes positively to growth in English legal origin countries while it contributes negatively or insignificantly to growth in French legal origin countries.

Y. Haung (2010)	bias-corrected Least Square Dummy Variables (LSDV) and GMM estimations	90 non-transition economies	liquid liabilities/GDP Private credit/GDP Commercial bank assets/ sum of commercial bank and central bank assets.	The institutional improvement index Log real GDP per capita Trade openness Aggregate investment Black market premium	annual	1960-99	There is a positive effect of political institutional improvement on banking sector development at least in the short-run, particularly for lower income countries.
Sharma and Nguyen (2010)	OLS	Figi (in comparison with 40 developed and developing countries)	*composite index for banking development:* the ratio of bank assets to GDP, the ratio of bank private sector credit to GDP, the ratio of bank, liquid liabilities to GDP	Strength of the relevant legal rules indicators (La Porta, *et al*., 1998a). Quality of law enforcement indicators: efficiency of the judicial system, rule of law, corruption, risk of expropriation and the quality of accounting standards	Annual	1970-2006	The results emphasized a direct relationship between law enforcement quality and banking development, however they suggest that the legal rules codifying creditor rights may not be as influential as had been thought previously. Fiji's banking sector appears to have developed relatively well despite very weak legal rules and average law enforcement quality.
Yu and Gan (2010)	OLS	Malaysia	liquid liability, private sector credit domestic credit	Real GDP real interest rates financial liberalization index constructed by Kaminsky and Schmukler (2003) trade openness= total trade/GDP	Quarterly data	1980-2007	First, the higher the growth of GDP, the better the Malaysian banking sector development. Second, financial liberalization has negative impact on banking sector development suggesting that financial liberalization should come in a later stage, when adequate institutions and sound macroeconomic policies are already in place.

							Finally the real interest rates and trade openness are not statistically significant determinants of the banking sector development.
Abzari, Zarei and Esfahani (2011)	VAR and Granger causality test	8 developing countries of D-8 group (Iran, turkey, Pakistan, Bangladesh, Indonesia, Malaysia, Egypt, Nigeria)	Log Liquid liability to GDP. Log Domestic credit provided by the banking sector to GDP. Log Domestic credit provided by financial intermediaries to private sector GDP.	Log net inflow of investment/GDP Log GDP	Annual	1976-2005	Existence of causality link from FDI to banking sector development with exception to Indonesia, Malaysia and Egypt at 5 percent level of significance.
Aggarwal, Demirgüç-Kunt, Pería (2011)	Fixed effects estimation GMM estimation IV estimation	109 developing countries	Bank Deposits/GDP Bank Credit to private sector/ GDP.	Remittances to GDP GDP per capita Log of GDP Inflation Dual exchange rate Exports to GDP FDI inflows to GDP Aid flows to GDP Portfolio inflows to GDP	Annual	1975–2007	There is a positive and significant impact of remittances on banking sector development in developing countries, irrespective of the different control variables, estimation techniques used and different measures of banking sector development.

Chowdhury (2011)	Johansen Maximum Likelihood cointegration Vector Error Correction Model (VECM)	Bangladesh	Credit/GDP Deposit/GDP M2/GDP	remittance GDP per capita Log of GDP CPI Interest rates used alternatively (cash rate, deposit rate and lending rate) Trade openness Openness in capital account (the flow of FDI plus net official development assistance (ODA)/GDP)	Annual	1971-2008	The results suggest that remittances have a significant positive effect on banking sector development. However, banking sector development is neutral in its effect on the inflow of remittances.
Erosy (2011)	Bounds test for cointegration within the ARDL (Autoregressive Distributed Lag) approach. Granger Causality test under VECM	Turkey	Liquid liabilities (M2)/GDP	Financial openness: (FDI net inflows+ FDI net outflows+ net portfolio investment)/GDP Real GDP Output volatility: the 5 year rolling standard deviation of real GDP growth rate	Annual	1980-2008	Results of the bounds test reveal that financial openness is in a long run equilibrium relationship with banking sector development, growth and output volatility in Turkey. Granger causality tests, on the other hand, show a unidirectional causality running from banking sector development to financial openness in the long run and from financial openness to output volatility in the short run. Yet, no Granger causality is detected neither from financial

							openness to growth nor from financial openness to banking sector development in Turkey.
Oke, Uadiale and Okpala (2011)	ordinary least square (OLS) and GMM	Nigeria	M2/GDP Private credit/GDP	remittances, GDP, Inflation rate trade openness, the dummy for dual exchange rates regimes, the dummy representing Financial Liberalization, one lag value of remittances	Annual	1977-2009	The results indicate remittances positively and significantly influence banking sector development in Nigeria, with the exception of the private credit ratio in the GMM estimation where the coefficient is insignificant. This implies that remittances raise liquid liabilities more than loanable funds in Nigeria, as remittances are likely used for consumption more than for productive purposes.
Voghouei, Azali and Law (2011)	System GMM	60 low-, middle-, and high-income countries	Index for banking sector development: Liquid liabilities Private sector credit Commercial banks assets/(commercial banks assets+ central bank assets) Index for capital market development: stock market capitalization total value traded	Political institutions: Executive recruitment Executive constraint Political competition Political checks and balances Freedom of press Distribution of resources: Gini coefficient Economic institutions: Corruption Bureaucratic quality	Annual	1980-2006	The results reveal that political power is a statistically significant determinant of economic institutions and hence affects the development of financial systems.

			turnover ratio	Government repudiation of contracts Risk of expropriation Rule of law Control variables: Trade openness Capital account openness Legal origin Inflation rate GDP per capita (PPP) Latitude Tropic Land lock Ethnic Religion language			
Becerra, Cavallo, and Scartascini (2012)	OLS, IV regressions and System GMM	97 countries (27 developed and 70 developing)	Domestic credit to private sector (% of GDP) Stock market capitalization Liquid liabilities	interest groups' incentive to block financial development proxied by: credit dependence Strength of promoters bureaucratic quality index of corruption index of government stability, Index of the quality of institutions (the sum of the corruption, law and order, and bureaucratic	Annual	1965-2003	The results suggest that lower opposition to financial development leads to enhancing credit markets development only in those countries that have high government capabilities. On the other hand, improvements in government capabilities have a significant impact on credit market development only in those countries where credit dependency is high (i.e. lower opposition).

				quality indexes) log real GDP per capita in PPP, as proxy of the level of industrialization trade openness financial openness= volume of foreign assets and liabilities (% of GDP) legal origin			
Obamuyi and Demehin (2012)	Cointegration and vector error correction models (VECM)	Nigeria	Broad money (M2)/ GDP	deposit rates inflation rate, lagged value of financial depth($M2/GDP_{t-1}$), GDP growth rate domestic savings/GDP exchange rate, liquidity reserve ratio, Shift in financial policy from regulation to deregulation of interest.	Annual	1973 - 2009	Interest rate reform has a positive and significant effect on banking sector development in Nigeria.

APPENDIX (B): DESCRIPTION OF VARIABLES

Variable		Description	Unit of measurement	Source
Banking Sector Development	Private sector credit	Claims on the private sector by deposit money banks divided by GDP.	Percentage of GDP	Beck and Demirgüç-Kunt (2009)
Financial Liberalization	Banking Liberalization	It is proxied by Credit Market Regulation index. This index focuses on regulatory restraints on Credit markets. The first two sub-components; ownership of banks and competition in domestic banking, provide evidence on the extent to which the banking industry is dominated by private banks and whether foreign banks are permitted to compete in the market. The last sub-component shows the presence of controls on interest rates.	The index ranges from 0-10. Higher values indicate higher level of banking sector liberalization	Gwartney, Lawson and Hall (2011)
	Capital account openness index	This index measures a country's degree of capital account openness. It is a de-jure measure that attempts to measure the intensity of capital controls. It is based on the IMF measure of Exchange Restrictions.	Higher values indicate the more open the country is to cross-border capital transactions.	Chinn and Ito (2008)
Capital Market Development	Stock market Capitalization of listed companies	It is the share price times the number of shares outstanding. Listed domestic companies are the domestically incorporated companies listed on the country's stock exchanges at the end of the year. Listed companies do not include investment companies, mutual funds, or other collective investment vehicle.	Percentage of GDP	Beck and Demirgüç-Kunt (2009)

	Variable	Description	Unit of measurement	Source
Institutional and Legal Characteristics	Rule of law	It is proxied by the integrity of the legal system index which is based on the International Country Risk Guide (ICGR) data for Law and Order. The 'law' sub-component assesses the strength and impartiality of the legal system, and the 'order' sub-component assesses popular observance of the law.	The index ranges from 0-10 where better institutional quality receives higher scores.	Gwartney, Lawson and Hall (2011)
	Property Rights Protection Index	It is Heritage Foundation Property rights index which measures the degree to which a country's laws protect private property rights and the degree of their enforcement. It also assesses the likelihood that private property will be expropriated and analyzes the independence of the judiciary, the existence of corruption within the judiciary, and the ability of individuals and businesses to enforce contracts.	This index ranges from 0 to 100 where higher values are given to countries that protect property rights more effectively.	Heritage Foundation
	Freedom from corruption	It is the Heritage Foundation Freedom from Corruption Index. The score for this index is derived primarily from Transparency International's Corruption Perceptions Index (CPI) for 2010, which measures the level of corruption in 178 countries.	The score of the Freedom from corruption Index ranges from 0 to 100 where 100 indicates very little corruption while 0 indicates a very corrupt government.	Heritage Foundation
	French Legal Origin	It dummy variable for the French legal origin countries.	It takes the value of 1 in case of French legal origin countries and 0 otherwise.	La Porta, *et al.* (1998b)

Variable		Description	Unit of measurement	Source
Trade openness		The sum of exports and imports of goods and services measured as a share of GDP.	Percentage of GDP	World Development Indicators
Macroeconomic Variables	Workers' remittances, compensation of employees, and migrants' transfers, received	Remittances are classified as current private transfers from migrant workers resident in the host country for more than a year, irrespective of their immigration status, to recipients in their country of origin. Migrants' transfers are defined as the net worth of migrants who are expected to remain in the host country for more than one year that is transferred from one country to another at the time of migration. Compensation of employees is the income of migrants who have lived in the host country for less than a year.	Percentage of GDP	World Development Indicators
	Real GDP per capital	Gross domestic product divided by midyear population. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products.	2000 constant prices in USD	World Development Indicators
	Inflation, GDP deflator (% annual)	Inflation as measured by the annual growth rate of the GDP implicit deflator shows the rate of price change in the economy as a whole.	Annual percentage change	World Development Indicators

APPENDIX (C): BANKING SECTOR CHARACTERISTICS

	BRL	CHL	ECU	EGY	IND	IDN	JOR	MYL	MEX	MAR	PAK	PER	PHL	RUS	ZAF	THA	TUN	TUR	Avg.	HIC	MIC
1.Depth																					
1.1 M2 to GDP (%)																					
2000	47.3	96.9	23.8	76.7	53.9	53.9	112.5	122.7	27.3	74.4	38.6	32.2	57.7	21.5	54.1	114.5	50.1	34.5	60.7	116.9	64.4
2004	50.7	78.8	23.7	96.6	63.5	45.0	126.2	131.7	27.0	80.0	48.4	26.7	56.3	31.1	64.3	114.7	52.0	34.6	64.0	115.3	73.0
2008	64.1	77.3	28.2	88.4	75.8	38.3	122.1	124.0	26.7	107.9	45.2	34.2	59.4	39.4	84.6	109.1	58.4	48.6	68.4	132.1	79.3
2009	69.4	71.4	32.4	83.1	78.0	38.2	139.9	145.9	30.4	107.5	41.8	34.1	62.1	49.2	81.2	117.0	61.8	54.6	72.1	140.6	95.9
Average	55.2	81.7	25.1	90.4	65.5	44.9	125.9	132.2	27.9	89.1	45.1	30.6	58.6	33.5	69.5	113.0	54.1	42.0	65.8	120.5	75.7
1.2 Central bank assets to GDP (%)																					
2000	10.7	10.68	11.20	25.18	7.59	17.26	11.87	0.59	..	5.78	14.63	0.26	5.51	7.49	1.17	2.13	0.36	0.73	7.83	1.2	4.9
2004	15.5	6.38	3.70	44.52	2.20	11.67	7.77	0.03	..	3.64	4.29	0.06	1.99	1.94	2.64	1.78	0.16	4.60	6.64	1.1	3.7
2008	14.2	0.97	1.16	19.41	1.80	5.78	5.98	0.34	..	1.60	9.83	..	3.70	0.89	0.52	2.79	0.14	1.64	4.42	1.1	2.2
2009	17.9	0.97	0.08	14.52	1.97	5.01	6.78	0.38	..	1.06	10.81	..	3.44	0.96	0.46	3.17	0.12	1.30	4.31	1.6	2.9
Average	14.2	5.8	4.1	29.9	3.5	11.1	8.4	0.3	..	3.2	8.5	0.2	3.1	2.5	1.5	2.1	0.3	3.9	6.2	1.1	3.5
1.3 Deposit money bank assets to GDP (%)																					
2000	62.9	60.6	38.2	74.3	41.1	43.7	86.4	131.0	32.6	63.7	30.2	28.9	47.2	18.5	70.6	131.6	52.4	32.6	58.1	83.0	31.7
2004	61.6	61.8	19.8	82.4	52.1	37.1	85.7	116.8	24.8	62.4	36.3	21.1	44.7	25.5	68.5	113.4	57.8	35.7	56.0	100.0	29.7
2008	77.9	78.4	23.8	69.6	63.0	30.8	101.8	105.0	30.3	79.3	40.0	23.3	38.2	39.2	85.4	104.1	58.3	49.6	61.0	111.3	38.1
2009	83.3	83.4	27.2	68.7	62.7	30.5	97.0	126.5	34.0	84.7	36.5	26.0	43.4	49.6	87.7	108.0	60.8	58.8	64.9	125.3	42.7
Average	67.8	67.0	25.0	76.2	53.1	36.5	93.5	120.0	28.9	68.4	35.2	23.7	43.0	29.2	75.0	112.3	57.7	41.3	58.5	102.1	33.1
1.4 Deposits to GDP (%)																					
2000	40.5	48.7	18.4	61.1	42.6	44.7	85.6	107.6	24.6	56.4	26.5	26.1	50.4	12.5	50.1	103.3	43.8	28.3	48.4	63.6	26.5
2004	43.9	44.0	19.9	79.2	50.6	38.6	99.6	112.0	20.2	64.0	33.4	21.2	46.9	19.1	51.4	100.4	46.4	29.4	51.1	68.6	29.6
2008	60.7	52.1	25.8	76.4	63.2	33.7	108.1	109.4	21.9	85.2	35.3	24.3	45.8	30.9	63.4	84.1	50.9	39.8	56.2	78.4	35.7

	BRL	CHL	ECU	EGY	IND	IDN	JOR	MYL	MEX	MAR	PAK	PER	PHL	RUS	ZAF	THA	TUN	TUR	Avg.	HIC	MIC
2009	66.4	55.2	27.9	75.4	69.5	33.2	109.2	109.1	22.7	93.5	35.7	25.9	45.3	35.6	67.2	79.0	52.0	42.1	58.1	89.7	43.7
Average	49.1	48.6	21.7	74.0	53.3	38.1	99.7	112.2	21.9	69.9	32.4	23.7	47.8	22.0	55.5	95.8	47.9	34.3	52.7	74.1	31.6
2.Access																					
2.1 Loan accounts per 1,000 adults (commercial banks)																					
2000	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2004	..	573.6	..	..	88.2	117.1	150.3	457.4	220.8	..	39.1	109.3	..	..	..	178.0	..	..	214.9	..	..
2008	..	829.0	..	..	130.9	173.6	162.7	686.2	395.6	..	48.8	237.7	..	..	..	257.9	..	..	324.7	..	..
2009	514	843.4	..	..	132.0	189.3	207.9	640.6	326.1	..	38.8	195.5	..	..	..	263.5	..	..	335.1	..	..
Average	514	730.6	..	..	114.1	150.7	167.7	621.5	341.1	..	45.2	168.9	..	..	..	228.8	..	..	291.6	..	..
2.2 Deposit accounts per 1,000 adults (commercial banks)																					
2000	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2004	681	1410	..	..	607.6	481.1	795.8	1780.8	507.7	320.7	156.8	729.6	357.9	..	383.8	1113.3	..	..	717.4	474.2	9.8
2008	890	1904	..	386.1	711.6	464.7	918.7	1632.3	996.5	411.1	230.7	681.7	408.9	..	780.5	1402.2	..	1763.2	905.5	1094	345
2009	933	2007	..	376.4	794.4	485.3	934.4	1576.5	1047.9	659.3	226.2	704.8	424.3	..	887.7	1401.6	..	1649.2	940.5	1257	557
Average	794	1687	..	378.1	664.5	471.2	872.6	1772.5	717.8	402.0	201.8	600.4	391.1	..	663.0	1300.9	..	1727.7	840.2	885.4	277
2.3 Household deposit accounts per 1,000 adults (commercial banks)																					
2000	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2004	..	1372	..	..	584.4	471.7	..	..	..	290.8	58.0	..	..	..	..	1072.4	..	..	641.5	..	..
2008	..	1851	..	376.9	660.5	450.8	..	..	..	377.8	95.7	..	..	..	..	1350.2	..	1624.6	848.5	..	..
2009	..	1960	..	367.5	723.0	469.0	..	..	..	620.3	99.1	..	..	..	..	1347.4	..	1517.4	888.0	..	..
Average	..	1641	..	369.0	618.1	459.0	..	..	..	370.7	77.4	..	..	..	..	1252.6	..	1593.2	792.2	..	..
2.4 Bank branches per 100,000 adults (commercial banks)																					
2000	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	46.5	..
2004	..	12.5	..	3.8	9.0	5.1	18.8	13.3	10.9	9.9	7.4	4.3	8.3	26.7	4.8	7.7	12.0	14.2	10.5	46.5	4.1
2008	43.1	15.4	..	4.5	9.3	6.5	18.9	10.6	13.4	14.2	8.2	28.2	7.7	35.8	7.9	10.2	14.5	16.9	15.6	30.6	7.9

	BRL	CHL	ECU	EGY	IND	IDN	JOR	MYL	MEX	MAR	PAK	PER	PHL	RUS	ZAF	THA	TUN	TUR	Avg.	HIC	MIC
2009	43.9	16.9	..	4.6	9.6	7.5	19.1	10.4	14.1	19.6	8.3	33.1	7.7	35.0	9.4	10.7	15.0	17.1	16.6	32.4	10.1
Average	42.6	14.3	..	4.2	9.2	5.9	18.6	11.3	12.2	13.0	7.8	17.0	7.9	31.7	7.1	9.2	12.9	15.0	12.8	32.6	7.2
2.5 Automated teller machines (ATMs) (per 100,000 adults)																					
2000	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2004	105	33.3	..	2.7	..	8.4	..	27.2	28.4	8.3	0.7	10.7	10.4	16.2	29.9	19.8	8.5	28.3	22.5	68.6	10.1
2008	112	54.7	..	6.5	4.3	12.9	25.6	42.3	41.2	16.3	3.4	20.3	13.4	65.6	44.1	64.8	15.6	42.5	34.4	69.2	24.1
2009	115	57.6	..	7.7	5.2	13.9	27.3	53.1	42.8	18.3	3.9	22.2	14.4	76.6	52.6	72.6	17.9	45.5	38.1	78.0	29
Average	110	46.1	..	3.5	..	11.3	..	33.6	41.7	..	2.3	15.6	12.2	43.2	34.9	46.5	12.8	34.8	32.7	79.1	17.9
2.6 Outstanding deposits with commercial banks (% of GDP)																					
2000	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2004	29.2	34.3	..		46.6	42.0	142.9	111.8	19.1	64.5	36.0	19.6	26.0	16.1	37.9	87.6	45.5	34.2	49.6	..	..
2008	46.9	37.8	..	83.4	58.2	35.4	112.4	106.0	19.7	83.1	33.3	26.2	38.6	26.3	46.6	78.3	52.4	45.8	54.7	..	..
2009	46.3	38.0	..	77.7	59.9	35.2	113.9	125.2	20.7	85.4	30.7	25.9	41.6	33.4	44.7	78.4	55.4	51.2	56.7	..	..
Average	39.5	35.0	..	85.1	52.1	38.3	129.1	116.6	18.7	77.0	35.1	22.4	31.3	23.8	43.1	82.0	49.7	41.4	53.5	..	..
2.7 Outstanding loans with commercial banks (% of GDP)																					
2000	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2004	19.0	60.7	..	..	27.2	24.4	74.2	92.0	12.6	49.0	26.1	15.0	23.8	26.2	57.1	83.7	53.8	16.8	41.3	..	..
2008	29.9	78.8	..	44.8	43.3	26.4	80.2	82.8	15.5	75.4	29.4	24.1	16.5	48.2	78.5	81.4	55.0	35.6	49.7	..	..
2009	31.6	76.4	..	41.3	43.5	25.7	74.1	94.9	16.5	77.5	23.4	23.4	16.3	51.2	75.3	85.1	57.3	37.3	50.0	..	..
Average	26.8	67.2	..	46.5	36.6	25.1	81.4	92.0	14.2	63.3	27.5	19.1	19.4	38.8	70.1	80.3	54.3	28.3	47.1	..	..

	BRL	CHL	ECU	EGY	IND	IDN	JOR	MYL	MEX	MAR	PAK	PER	PHL	RUS	ZAF	THA	TUN	TUR	Avg.	HIC	MIC
3. Efficiency																					
3.1 profitability																					
3.1.1 Return on Asset (%)																					
2000	1.0	1.4	-11.8	0.8	0.7	0.2	0.8	1.0	1.0	1.1	0.2	0.3	0.2	8.0	1.7	-0.1	1.2	0.2	0.4	0.9	1.0
2004	1.7	1.5	-2.6	0.5	1.2	2.3	1.0	1.3	1.0	0.8	1.1	1.3	0.8	1.5	0.9	1.3	0.5	3.2	1.1	1.0	1.3
2008	0.9	0.5	1.7	0.7	1.0	1.2	1.6	1.2	0.6	1.1	0.8	2.3	0.6	1.6	1.2	0.9	1.0	1.7	1.2	0.6	1.6
2009	1.2	0.7	1.3	0.7	1.0	1.7	1.1	0.8	0.7	1.2	0.8	2.3	1.1	1.0	0.9	0.9	1.0	2.4	1.2	0.6	1.1
Average	1.6	1.3	-1.7	0.6	0.9	1.4	1.2	1.1	0.9	0.9	1.0	1.5	0.8	2.2	1.3	0.8	0.7	1.9	1.0	0.8	1.3
3.1.2 Return on equity (%)																					
2000	9.0	15.6	67.7	13.0	13.8	3.5	10.5	11.0	11.1	10.7	5.4	3.4	1.1	54.1	15.7	-1.9	11.4	1.7	14.3	12.13	11.4
2004	15.4	16.8	11.6	7.8	21.3	23.2	9.5	16.6	9.8	9.2	16	11.6	7.1	8.7	16	15.8	5.0	20	13.4	1	13.4
2008	8.2	7.1	-43.7	11.4	14.0	12.2	10.4	15.7	6.2	14.0	7.9	27.6	7.0	11.8	20.9	10.0	11.4	16.9	9.4	11.08	15.3
2009	9.8	6.3	12.2	10.8	14.5	16.4	7.1	10.0	5.5	14.2	7.5	21.8	11.3	8.8	13.5	9.7	11.6	20.4	11.7	7.86	12.3
Average	14.4	15.0	5.7	9.6	15.3	14.6	9.9	13.1	8.4	10.7	11.9	15.6	6.9	15.0	15.6	9.8	7.4	0.0	11.1	12.38	13.3
3.1.3 Net interest margin (%)																					
2000	5.5	0.1	1.5	1.7	3.5	2.5	2.5	3.3	5.9	0.04	5.4	4.5	1.2	0.4	3.3	1.8	3.2	2.9	2.7	2.08	3.29
2004	4.6	0.1	1.8	1.7	3.3	5.7	1.7	3.2	5.7	0.04	2.9	4.0	2.3	2.2	2.4	2.6	2.6	1.8	2.7	1.72	3.21
2008	1.9	0.0	5.8	2.0	2.7	5.4	2.9	3.1	5.3	0.03	6.5	4.1	2.3	3.3	3.2	2.8	3.1	4.3	3.3	1.79	4.02
2009	2.2	0.0	5.4	2.3	3.0	5.6	2.6	3.1	5.2	0.03	7.3	5.4	2.5	3.5	3.0	2.4	2.6	4.8	3.4	1.72	3.56
Average	4.4	0.1	4.3	1.7	3.3	4.8	2.3	3.1	5.8	0.04	5.2	4.4	2.0	2.7	3.6	2.5	2.8	3.3	3.1	1.81	3.47
3.2 Efficiency																					
3.2.1 Lending-deposit spread (%)																					
2000	39.6	5.6	8.3	3.8	..	6.0	4.8	4.3	8.7	8.2		20.2	2.6	17.9	5.3	4.5	..	..	10.0	8.29	4.16
2004	39.5	3.2	5.8	5.7	..	7.7	5.8	3.0	4.7	7.9	5.6	22.3	3.9	7.7	4.7	4.5	..	..	8.8	6.66	3.82
2008	35.6	5.8	..	5.7	..	5.1	3.6	3.0	5.7	..	6.0	20.2	4.3	6.5	3.5	4.6	..	..	8.4	6.44	3.21

	BRL	CHL	ECU	EGY	IND	IDN	JOR	MYL	MEX	MAR	PAK	PER	PHL	RUS	ZAF	THA	TUN	TUR	Avg.	HIC	MIC
2009	35.4	5.2	..	5.5	..	5.2	4.3	3.0	5.1	..	5.9	18.2	5.8	6.7	3.2	4.9	..	..	8.3	6.54	4.35
Average	38.6	4.2	7.6	5.3	..	5.3	4.7	3.3	5.4	8.3	6.2	19.7	4.3	8.9	4.4	4.4	..	..	8.8	7.31	3.96
3.2.2 Overhead costs to total assets (%)																					
2000	6.3	2.9	7.9	1.6	2.4	2.7	1.8	1.42	4.9	2.4	3.3	5.3	3.1	6.4	3.0	2.0	2.4	4.6	3.6	1.62	4.43
2004	5.6	2.7	6.7	1.4	2.2	3.3	1.8	1.42	4.4	2.0	2.2	5.1	2.9	4.1	3.0	1.7	2.5	5.0	3.2	1.40	4.07
2008	3.2	..	5.8	1.4	1.8	3.3	1.7	1.36	3.5	2.1	2.8	3.7	2.9	6.1	2.5	2.0	2.1	2.9	2.9	1.34	3.43
2009	4.0	..	5.5	1.4	1.7	3.3	1.7	1.39	3.8	1.8	2.7	4.1	2.9		2.7	2.1	2.0	2.6	2.7	1.33	3.60
Average	4.9	2.7	6.6	1.4	2.1	3.1	1.8	1.40	4.9	2.1	2.6	4.6	3.1	4.8	2.9	2.0	2.3	4.0	3.2	1.42	3.88
3.3 Competitiveness																					
3.3.1. 3-bank asset concentration (%)																					
2000	29.8	38.4	51.9	51.7	34.2	62.7	78.3	43.1	57.2	46.6	64.1	61.9	100.0	41.0	75.0	49.6	43.2	76.3	55.8	63.04	67.9
2004	37.9	53.5	48.5	51.1	32.8	46.6	81.8	34.6	58.3	58.7	47.7	72.5	70.0	20.5	96.9	46.6	44.4	89.9	55.1	67.90	61.1
2008	49.9	..	53.0	50.6	31.8	43.2	77.1	37.7	79.5	64.8	39.6	76.6	44.2	38.8	72.4	41.1	42.4	43.6	52.1	65.25	59.7
2009	58.6	..	54.3	50.2	31.8	44.3	71.7	37.6	74.1	71.7	39.7	74.1	43.2	42.9	72.5	41.8	39.9	46.2	52.6	63.77	58.6
Average	40.0	50.2	50.2	51.2	33.4	50.3	79.1	37.0	65.1	58.5	49.0	72.6	63.8	41.9	81.7	45.8	42.8	71.9	54.7	64.82	62.3
3.3.2 Percentage of foreign bank assets among total bank assets (%)																					
2000	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2004	19.0	..	12.0	10.0	4.0	30.0	2.0	18.0	82.0	..	29.0	41.0	..	..	..	3.0	20.0	..	22.5	14	31.0
2008	22.0	37.0	13.0	25.0	5.0	31.0	22.0	18.0	76.0	18.0	51.0	50.0	..	13.0	21.0	7.0	28.0	16.0	26.6	16	35.0
2009	..	34.0	5.0	23.0	5.0	32.0	23.0	18.0	75.0	34.0	53.0	50.0	..	12.0	22.0	6.0	..	14.0	27.1	17	31.5
Average	23.4	35.5	11.0	19.3	4.3	30.8	15.7	17.8	79.3	23.7	42.3	47.7	1.5	10.6	21.8	4.3	26.2	16.5	15.3	15.9	31.7
3.3.3 Percentage of foreign banks among total banks (%)																					
2000	35.0	52.0	23.0	16.0	8.0	33.0	10.0	26.0	49.0	38.0	19.0	59.0	17.0	9.0	14.0	12.0	38.0	15.0	26.3	22	30.0
2004	36.0	39.0	15.0	19.0	9.0	33.0	20.0	30.0	54.0	44.0	12.0	60.0	14.0	14.0	17.0	17.0	44.0	20.0	27.6	28	36.0
2008	37.0	48.0	15.0	52.0	12.0	50.0	40.0	33.0	48.0	40.0	40.0	63.0	15.0	19.0	22.0	19.0	50.0	43.0	35.9	32	43.0

	BRL	CHL	ECU	EGY	IND	IDN	JOR	MYL	MEX	MAR	PAK	PER	PHL	RUS	ZAF	THA	TUN	TUR	Avg.	HIC	MIC
2009	38.0	48.0	19.0	52.0	12.0	52.0	40.0	33.0	48.0	50.0	40.0	63.0	13.0	19.0	22.0	19.0	50.0	43.0	36.7	33	44.5
Average	36.3	44.2	15.7	40.5	11.0	42.7	31.7	31.8	48.8	42.3	29.2	61.0	14.2	16.7	21.2	16.5	49.0	35.2	32.7	31.50	37.3
3.3.4 Boone Indicator																					
2000	-0.08	-0.08	-0.51	-0.07	-0.10	-0.05	-0.07	-0.02	-0.31	-0.07	-0.20	-0.06	0.00	-0.09	-0.04	-0.07	0.02	-0.02	-0.10	-0.06	-0.06
2004	-0.09	-0.06	-1.45	-0.06	-0.08	-0.05	-0.05	-0.01	-0.19	-0.05	-0.12	-0.08	-0.07	-0.05	-0.01	-0.10	0.02	-0.01	-0.14	-0.05	-0.05
2008	-0.05	-0.01	-1.02	-0.07	-0.09	-0.06	-0.07	-0.02	-0.18	-0.08	-0.15	-0.07	-0.10	-0.04	-0.01	-0.08	0.01	-0.04	-0.12	-0.03	-0.06
2009	-0.06	0.02	-1.53	-0.08	-0.08	-0.05	-0.06	0.00	-0.14	-0.07	-0.14	-0.07	-0.07	-0.11	-0.01	-0.09	0.00	-0.01	-0.14	-0.04	-0.05
Average	-0.09	-0.05	-1.65	-0.07	-0.08	-0.06	-0.06	-0.01	-0.20	-0.06	-0.19	-0.07	-0.06	-0.06	-0.03	-0.08	0.02	-0.01	-0.16	-0.05	-0.06
4. Stability:																					
4.1 capital adequacy																					
4.1.1 Regulatory capital to risk-weighted assets (%)																					
2000	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2004	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2008	18	12.5	19.9	14.7	13.0	16.8	18.4	15.5	15.3	11.2	12.2	11.9	15.5	16.8	13.0	13.9	11.7	18	14.9	12.4	15.2
2009	19	14.3	19.6	15.1	13.2	17.4	19.6	18.2	16.5	11.7	14.0	13.5	15.8	20.9	14.1	15.8	12.4	21	16.2	14.6	16.4
Average	19	12.9	19.6	14.6	12.7	18.8	19.6	15.3	15.6	11.5	13	12.3	16.5	16.8	13	14.3	12.0	21	15.3	13	16
4.2 Asset quality																					
4.2.1 Bank non-performing loans to gross loans (%)																					
2000	8.3	1.7	31.0	13.6	12.8	34.4	18.4	15.4	5.8	17.5	19.5	..	24.0	7.7	..	17.7	21.6	9.2	16.2	4.1	11.3
2004	2.9	1.2	6.4	23.6	7.2	4.5	10.3	11.7	2.5	19.4	11.6	9.5	14.4	3.8	1.8	11.9	23.6	6.0	9.6	2.5	6.9
2008	3.1	1.0	3.4	14.8	2.3	3.2	4.2	4.8	3.0	6.0	10.5	2.2	4.5	3.8	3.9	5.7	15.5	3.8	5.3	1.9	3.8
2009	4.2	2.9	4.1	13.4	2.3	3.3	6.7	3.6	2.8	5.5	12.6	2.7	4.1	9.5	5.9	5.3	13.2	5.6	6.0	3.3	5.1
Average	4.3	1.4	8.7	19.1	6.6	12.6	10.7	10.8	3.2	13.6	13.9	6.5	14.1	4.9	2.7	10.6	19.7	9.1	9.7	2.5	7.0

	BRL	CHL	ECU	EGY	IND	IDN	JOR	MYL	MEX	MAR	PAK	PER	PHL	RUS	ZAF	THA	TUN	TUR	Avg.	HIC	MIC
4.3 Liquidity																					
4.3.1 Liquid assets to deposits and short term funding (%)																					
2000	60.0	31.9	17.0	25.2	17.6	32.5	50.8	26.7	20.4	16.5	21.8	27.7	20.6	39.7	7.2	20.0	23.9	29.1	27.1	36.8	39.2
2004	60.7	27.7	29.5	34.2	11.7	33.8	53.2	30.2	50.2	27.7	19.7	26.3	19.2	42.3	12.4	10.2	20.6	42.8	30.7	33.6	36.9
2008	48.1	45.7	31.1	47.0	11.5	27.8	32.2	28.0	..	31.7	16.4	25.1	24.7	44.2	18.3	19.6	25.7	19.9	29.2	30.0	31.5
2009	52.7	43.7	36.0	41.7	11.2	30.0	34.1	27.8	..	36.2	16.2	22.6	25.1	52.6	17.0	18.3	26.6	17.3	29.9	29.7	31.7
Average	57.8	30.0	29.3	36.0	12.9	33.1	47.8	28.6	51.2	26.6	19.5	26.6	22.4	42.6	15.6	17.4	23.2	37.3	30.6	34.4	35.0
4.4 Sensitivity to market risk and default probability																					
4.4.1 Bank Z-score																					
2000	18.4	28.9	17.3	22.0	21.3	3.4	26.4	20.4	13.1	41.0	4.7	14.6	24.5	9.4	17.9	1.8	33.5	9.8	18.2	20	14.7
2004	21.3	29.0	19.9	22.2	24.3	16.8	32.6	19.0	14.8	29.8	7.8	15.7	62.0	17.6	21.3	3.7	27.9	13.6	22.2	19.7	15.4
2008	16.5	7.1	23.3	22.4	28.1	17.6	49.5	18.5	9.8	31.1	10.6	13.0	34.2	19.1	25.5	4.3	29.1	28.6	21.6	19.5	17.6
2009	19.9	10.7	23.0	22.9	27.5	18.2	48.7	19.3	11.3	33.4	11	15.2	36.8	15.9	27	4.5	29.5	34	22.7	21	18.1
Average	20.3	25.1	21.2	21.1	23.9	14.0	38.7	19.1	12.1	31.8	8.6	14.6	39.7	18.3	19.2	3.4	29.8	18.2	21.1	18.8	15.8

Source: Beck and Demirguc-Kunt (2009); Financial Access Survey, IMF (2012); Global Financial Development Report, World Bank (2012); and World Development Indicators, World Bank (2012)

Data are averaged over 2000-2009.

.. indicates unavailable data.

Highlighted cells represent the highest and the lowest values.